00038895

BOMBAY BRANCH
OF THE
ROYAL ASIATIC SOCIETY
TOWN HALL, BOMBAY.

Digitized with financial assistance from the
Government of Maharashtra
on 02 January, 2016

Engr.d by Peter Maverick from a sketch in oil by Jn.o Neagle.

PETALESHAROO,

Son of Lalelasha, Knife Chief of the Pani-Loups: - in full dress.

BB
H
1

AMERICAN Natural History

BY

JOHN D. GODMAN, M.D.

Drawn by J. Peale, Jr.

Engraved by R. Kearney

Philadelphia

H. C. CAREY & I. LEA, CHESTNUT STREET.

LIBRARY OF THE ROMBY BRANCH ... ASSOCIATION

Cc-h-1

AMERICAN

NATURAL HISTORY.

38895

VOLUME I.

PART I.—MASTOLOGY.

BY JOHN D. GODMAN, M.D.

PROFESSOR OF NATURAL HISTORY IN THE FRANKLIN INSTITUTE OF PENNSYLVANIA; ONE OF THE PROFESSORS OF THE PHILADELPHIA MUSEUM; MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY; OF THE PHILADELPHIA ACADEMY OF NATURAL SCIENCES, &C.

PHILADELPHIA:

H. C. CAREY & I. LEA—CHESTNUT-STREET.

R. WRIGHT, PRINTER.

1826.

00038895

38895

Eastern District of Pennsylvania, to wit:

L. S. BE IT REMEMBERED, That on the twenty-sixth day of June, in the fiftieth year of the Independence of the United States of America, A. D. 1826, Robert Wright, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:

"American Natural History. Volume I. Part I. Mastology. By John D. Godman, M. D. professor of Natural History in the Franklin Institute of Pennsylvania; one of the Professors of the Philadelphia Museum; Member of the American Philosophical Society, of the Philadelphia Academy of Natural Sciences, &c.

In conformity to the Act of the Congress of the United States, intituled, "An Act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned"—And also to the Act entitled, An Act supplementary to an Act, entitled, An Act for the encouragement of learning, by securing the copies of Maps, Charts, and Books to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

TO

ROBERT OLIVER,

OF

BALTIMORE, MARYLAND,

WHOSE NAME

IS ONLY ANOTHER EXPRESSION

FOR

LIBERALITY AND MUNIFICENCE,

THIS WORK IS RESPECTFULLY

AND GRATEFULLY INSCRIBED,

BY HIS FRIEND,

THE AUTHOR.

PREFACE.

This work was begun in the spring of 1823, under a belief that the whole of the first part would be published within a year, or at farthest eighteen months from its commencement. Experience soon proved that the difficulties of this enterprize had not been correctly estimated, and that a vast labour remained to be performed after all the facts and observations were systematised, which remained to be gleaned from works that professedly or incidentally treated of American Natural History. How meagre and unsatisfactory the best of these books are, can only be imagined by those persons who have been obliged to examine them carefully; by them alone can an adequate idea be formed of the toil and disgust to be endured by whoever makes such search in hopes of collecting original observations, statements of facts worthy of repetition, or remarks properly illustrative of the manners and habits of our animals.

To account for the delay which has inevitably occurred in the preparation of this work, it may be sufficient to state that it has been frequently necessary to suspend it for weeks and months, in order to procure certain animals, to observe their habits in captivity, or to make daily visits to the woods and fields for the sake of witnessing their actions in a

state of nature. On other occasions we have undertaken considerable journies, in order to ascertain the correctness of statements, or to obtain sight of an individual subject of description. It would be far more agreeable thus to obtain materials for the whole work from nature, than to depend in the slightest degree upon books; but a long lifetime spent in this way on such a work, would not be too much to give it the requisite degree of perfection.

Another cause of delay has been the necessity we have frequently been under of collecting materials for the second and third volumes, when very solicitous to expedite the first; but as similar opportunities might not again occur, it was imperatively necessary to profit by them. This retardation of the first will operate, however, in equal proportion to increase the value and hasten the publication of the second and third volumes, which will be completed with as much speed as is consistent with propriety.

Our great aim in preparing this work has been to render it as useful and agreeable as possible, and to this end we have freely drawn upon all accessible authentic sources, with due acknowledgment for the benefits received. In addition to the references made in the body of the work, we shall give in the third volume an alphabetical catalogue of all the books whence we have derived assistance, or which we have consulted with advantage. This we do not only because we believe that there is no crime

more despicable than an attempt to deprive another of the fruits of his intellectual exertions, but in order to facilitate the labours of those who may be desirous of extending their researches through the most authentic works.

We should act with injustice to our own feelings if we omitted to avow the liberal and valuable assistance we have received from one whose name is sufficient to justify any encomiums on expanded views and zeal in the cause of scientific truth. The prince of Musignano, CHARLES L. BONAPARTE, has at all times thrown open to our use his rich library and cabinets, and still farther enhanced this kindness by contributing in numerous instances the result of his own scientific observations. Similar liberality in the cause of science has long since secured to him the esteem and respect of those who are devoted to its cultivation, and the warm admiration of all who have the advantage of his acquaintance.

To our distinguished countryman SAY, we are indebted for numerous excellent suggestions and much interesting information. Mr. GEORGE ORD, the respected vice-president of the Academy of Natural Sciences, has on several occasions yielded the most acceptable assistance, and allowed us the use of his note-book, by which we have profited considerably. From Mr. TITIAN PEALE, who in practical acquaintance with the natural history of his country has few equals, we have received frequent

aid. To our friend ROBERT BEST, M. D. of Lexington, who was formerly conservator of the Western Museum, we feel especially grateful for the communication of his most interesting notes and observations, made on the animals of the western country during a residence of twenty-five or thirty years in the state of Ohio.

The kindness of the venerable librarian of the Philosophical Society, JOHN VAUGHAN, Esq. has been amply exercised towards us in furnishing the freest opportunities of examining the admirable library of that respectable institution. Although he considers himself sufficiently repaid by the consciousness of having discharged what he is pleased to call his duty, we feel none the less grateful for his urbanity and the extent of his good will.

We have also received manifold acts of kindness from all the respectable naturalists of our acquaintance, both in this city and New York. All of these have exhibited the most gratifying willingness to aid in the advancement of our undertaking, and we beg them to accept of our sincerest thanks for the spirit in which they have contributed to its success.

The following circumstance, to be enumerated among the services rendered to this work, is one which we feel sure the reader will unite with us in considering as worthy of the highest commendation, and evincing a spirit which every generous mind must regard with unmingled pleasure. An American artist

had painted two original portraits of distinguished Indian chieftains, which were regarded by all who saw them as admirable for their force and truth of character. He was repeatedly solicited to sell them at his own price, but uniformly refused; neither would he sell *copies* of them, although on one occasion they were sought by a foreign gentleman in order to be sent to Russia. On learning that an American work was about to be published, for which illustrations of aboriginal physiognomy and costume were desirable, the artist presented both these pictures, rejecting every offer of compensation with a feeling truly American. These interesting specimens of the talents and liberality of Mr. JOHN NEAGLE are given in this volume, the full length being a likeness of PETALESHAROO,* son of the Knife-chief of the Pani-Loups,

* "Almost from the beginning of this interesting fete our attention had been attracted to a young man who seemed to be the leader or partizan of the warriors. He was about twenty-three years of age, of the finest form, tall, muscular, exceedingly graceful, and of a most prepossessing countenance. His head-dress of war-eagles' feathers descended in a double series upon his back, like wings, down to his saddle croup; his shield was highly decorated, and his long lance was ornamented by a plaited casing of red and blue cloth. On inquiring of the interpreter, our admiration was augmented by learning that he was no other than PETALESHAROO, with whose name and character we were already familiar. He is the most intrepid warrior of the nation, eldest son of LATELESHA, [the Knife-chief] destined as well by mental

and the bust a portrait of ONGPATONGA, or Big Elk, distinguished as the great chief and orator of the Omawhaws. The first was engraved by MAVERICK of New York, the second by BRIDPORT of Philadelphia.

---

and physical qualifications as by his distinguished birth, to be the future leader of his people.—The name of PETALESHAROO is connected with the abolition of a custom formerly prevalent in this nation, at which humanity shudders.

"An Ietan woman, brought captive into the village, was doomed to the Great Star by a warrior whose property she had become by the fate of war; she underwent the usual preparations, and on the appointed day was led to the cross amidst a great concourse of people, as eager perhaps as their civilized fellow men to witness the horrors of an execution. The victim was bound to the cross with thongs of skin, and the usual ceremonies being performed, her dread of a more terrible death was about to be terminated by the tomahawk and arrow. At this critical juncture PETALESHAROO stepped forward into the area, and in a hurried but firm manner declared that it was his father's wish to abolish this sacrifice; that he presented himself for the purpose of laying down his life upon the spot or of releasing the victim. He then cut the cords which bound her, carried her swiftly through the crowd to a horse which he presented to her, and having mounted another himself, conveyed her beyond the reach of immediate pursuit."—*Long's Exped. to the Rocky Mountains, vol. i. p.* 357.

This distinguished man, (together with ONGPATONGA and various other chiefs,) was in Philadelphia a few years since, on his way to the city of Washington, accompanied by

The vignette which ornaments our engraved title page is from an original design by JAMES PEALE, jr. an amateur who unites to the correct execution of a professed artist the happiest talent for perceiving and delineating the picturesque and beautiful.

In relation to the animals described in this work, it has been our constant aim to give none but such as certainly belong to this country, being much more desirous of presenting a faithful account of those known to inhabit it, than to produce an imposing catalogue of "NEW SPECIES," which at best might be little better than a string of barbarous new names applied to old and well known things.* In our third volume we shall give a complete synopsis of the mammalia inhabiting this country, with distinctive specific phrases, drawn up by the distinguished author of the recent splendid work on American

---

Major O'FALLON. Through the friendship of that gentleman Mr. NEAGLE enjoyed the most excellent opportunities of obtaining the portraits which adorn this volume.

* In consequence of having mislaid the manuscript containing the description of the wild cat or bay lynx, (*Felis Rufa*,) that species was accidentally omitted, and the inadvertence not perceived until it was too late to rectify it at the proper place. As this species will be fully described in the appendix, and we give a good figure of it on the same plate with the Canada lynx, (*Felis Canadensis*,) which it closely resembles in habits and manners, the omission will not be productive of inconvenience or injury to the reader.

Ornithology. In this synopsis all the doubtful and ridiculous species hitherto proposed as inhabitants of this country will be noted and rejected.

Although we are conscious of having used every exertion to render this book correct, we are far from believing that it is free from error; it has been prepared under too many disadvantages to allow us for a moment to hope that it will not be obnoxious to some censure. We regard it rather as a groundwork upon which we hope hereafter to erect a more perfect superstructure, having determined henceforth zealously to continue our efforts to obtain the materials necessary to give it the degree of permanence and beauty of which the subject is in every respect worthy; we shall therefore thankfully receive every suggestion made by candid critics for its improvement.

INTRODUCTION.

In this work the systematic arrangements of Linné and Cuvier are principally followed; the Linnean names of the orders, genera, &c. have uniformly been retained whenever they are entitled to such preference by *right of priority*. As long as every succeeding writer is at liberty to overturn systems and change names according to his own views or caprice, the most serious injury will result to natural science, and her votaries be effectually deterred from engaging in studies to which every avenue is barricaded by aggregations of learned lumber. We are happy already to have an excellent precedent in this country for adhering to original nomenclature; Say in all his scientific writings has evinced the same determination to give credit to whom credit is due, regardless of all arbitrary changes.

We have introduced the dental systems from F. Cuvier, with the view of enabling the reader more fully to appreciate the true importance of this part of animal organization, which indicates the *relations* in *point of regimen* existing between animals, *not their places* in a system of classification. The peculiarities of the teeth have immediate reference to the food upon which animals subsist, and by conse-

quence to the general character of their digestive organs; by comparing different genera we trace their degree of relationship in this respect, and form a better idea of their natural affinities. But if we arrange animals according to their proximity of dentition and regimen, we adopt *a method* (and there may be as many methods as organs) which will separate to great and unnatural distances animals whose striking similarity in all other respects would render such separation absurd.*

Beginners of the study of natural history are generally liable to form erroneous conclusions, among which none is more common and prejudicial than that of mistaking the system of classification for the subjects classed, or in other words, the arrangement of the names for the things themselves; nomenclature for natural history. The best system of classifica-

---

* According to the dentition, F. Cuvier properly places the cat first and the bear last of the carnivorous animals; the walrus after the ruminant animals, and the beaver among the last of the gnawers instead of the first. Various genera, well separated by other characters, are by their dentition reduced to mere species or varieties of the same genus. Thus, while the *system* of Cuvier arranges animals according to the closeness of their approach to the structure of the human body, which determines their comparative perfection, the *method* of his brother, having merely reference to their dentition, throws them into situations both curious and unnatural, because dependant upon the comparison of a single set of organs.

tion in the nature of things must be in a great degree arbitrary and imperfect, and so far from being natural history, is but a summary of distinctive epithets and characters to aid in the arrangement of knowledge, which can only be derived from a proper observation of natural objects. Had these obvious truths been attended to, we should never have had so great a number and such a farrago of new systems as have been offered to the world, neither would the study of natural history have been so long regarded by the mass of mankind as the study of any thing rather than the study of nature.

A good system is an invaluable assistant; an imperfect one is infinitely preferable to the entire absence of such an aid. The system, however, should always be secondary to the science, whose object is to teach the general and individual characters of living beings from an actual observation of their peculiarities of form and modes of living. The mistake above pointed out is continually urging many who would be esteemed naturalists to the formation of new genera and species, founded on trivial, accidental, or imperfectly noted differences between creatures which, to all rational observers, appear the same.—This retards science, and misleads individuals as to the character and objects of natural history, which, judged by the conduct of some who are regarded as authorities, would appear to be the science of magnifying trifles and bewildering the understanding.

In natural history, as in other departments of human knowledge, none but sciolists are pedants; such persons struggle to impart to their implements the dignity and importance that should belong to the work alone, and "in self adoring pride securely mailed" seek but to glorify themselves, considering the interests of science as nothing when weighed against the gratification of their own vanity.*

---

* "New nominal species perplex the student, increase the labours of the critical naturalist, and render the study of natural history tedious and difficult. If it was generally understood that it is more meritorious to extinguish a single nominal species than to establish a dozen new ones, it would effectually check the present mania for making new species often on slight foundations. This also leads to an overweening anxiety to secure priority; and hence descriptions are liable to be drawn up in a crude and hasty manner, without reference to the co-ordinate characters." De Kay's address to the New York Lycæum, p. 76.

ERRATA.

Page 33, first line, for "are desirous," read—*or are aeszrous.*
" 35, next to last line of second paragraph, for "occasions"—read *occasion.*
" 46, in the foot note, for "order"—read *family.*
" 49, third line from top, for "quantity"—read *number.*
[Page 80, the figure of the third species of shrew to have been marked thus, * could not be procured.]
" 117, second line, second paragraph, for "Missouri"—read *Mississipi.*
" 129, fourth line, second paragraph, for "strgggle"—read *struggle.*
" 255, note, fourth line from bottom, for "neminiunquam"—read *nemini unquam.* Same line, for "speiem"—read *speciem.*
" 291, fifth line from top, for "which are so circumstanced"—read *they being so circumstanced.*

AMERICAN

NATURAL HISTORY

CHAPTER I.

CLASS I.—MAMMALIA.

ORDER I. *Primates.*—FAMILY I. *Bimana.*

GENUS I. MAN; *Homo;* L.—SPECIES I. *H. Sapiens;* L.

VARIETIES, *a. Caucasian;* fair or white, originally from Europe.
b. Mongolian; Esquimaux; dark olive or swarthy, from the north of Asia.
c. American; red, indigenous?
d. Ethiopian; black, from Africa.

SECTION I.

Origin of the American Variety.

AMERICA, although undiscovered until near the conclusion of the fifteenth century of the christian era, must have been for ages previous the residence of an extensive and increasing population, since great numbers of native inhabitants were found on the southern portions of this continent by the adventurous voyagers who, under the guidance of CRISTOFORO COLOMBO,* first visited these shores. What must

* Latinized, *Columbus.*

have been the mutual surprise of the inhabitants of the old and new worlds at this first meeting? The Europeans, astonished to encounter a numerous and eager crowd where they had anticipated one vast solitude—and the aborigines, lost in amazement at the unimagined spectacle of a huge body which had slowly risen before their eyes from the remotest verge of ocean, and borne to their soil a strange assemblage of men differing from them in colour, language and apparel.

The origin of the North American Indians has justly attracted the attention of philosophers, and produced many interesting researches, as well as fruitless speculations. So long as those engaged in this investigation were content with mere theory without established data, or speculation without fact, no result was obtained except the useless multiplication of words; but, when the geography of the country, the nature of the climate, and the history, manners and polity of the various tribes were studied, the mystery involving the subject gradually lessened; so that at present, without much difficulty or error, we may come to a satisfactory conclusion relative to the manner in which this continent was peopled.

Preliminary to our investigation we must refer to the fact, that the laws of nature, governing the continuance of different races of animals profusely multiplied over the earth, are fixed and immutable, and what we observe of Nature's regular modes of operating at one period, is unquestionably true of all preceding times. Animals which are of different kinds, or generically distinct, are incapable of producing offspring together, but animals of the *same kind*, though

of different *species*, may and do produce offspring resembling both parents, by their union; yet this confusion ceases with the first product, inasmuch as these hybrids, or *mules*, are universally sterile, or incapable of propagating their similitude. This circumstance furnishes the most satisfactory and unequivocal means of deciding whether any beings we examine are specifically distinct or not, since, if they are merely *varieties* of the *same species*, they are capable of producing offspring in illimitable progression; but, if they are of *different species*, the first offspring terminates the race.

By the application of this test, we are able to pronounce with certainty, that the human race, wherever found, or however different in colour, are merely varieties of the same species, and evidently descended from the same parents. In all countries the marriage of Europeans with the natives, whether Asiatics, Africans, or Indians, is followed by children more or less resembling their parents, and this offspring is perfectly capable of continuing the race.

If there be any mode of accounting for the arrival of even a single male and female on this continent, we shall find no difficulty in understanding how so many nations became distributed over this vast region, nor can we, on an unprejudiced view of the whole subject, find any difficulty in believing that the myriads of human beings, that have lived from the beginning of time to the present hour, have all descended from two individuals. The history of the world, as presented to us by the most authentic records, or by the voice of universal tradition, leads us inevitably to conclude that from some point on the Eastern con-

tinent the human race originated, and gradually extended in various directions, subject to the influence of all accidents, of place, climate, disease, and facility or difficulty of procuring food: hence, notwithstanding that the connexion of many nations with the parent stock is entirely lost, there is not the slightest evidence that such nations are derived from any but the source we have stated; neither, when philosophically considered, is there any necessity that they should have originated in a different manner, since the cause is perfectly adequate to the effect; and where one sufficient cause is given no other should be sought.

Under the operation of different motives we find the scattered members of the human family removing by degrees from the centre towards the extremes of the old continent, and subsisting in such remote situations until the disposition or ability to return was entirely lost, and they became inured to the climate, however dreadfully inclement.

Though the human race always remains specifically unchanged in every condition, yet the action of external causes is capable of producing considerable variations in the appearance of individuals or tribes exposed to their influence. Thus we find those who reside in uniformly warm and spontaneously productive countries, of a slender frame, a relaxed and delicate habit, and of a sallow or tawny complexion. The natives of Africa, who are exposed to the most intense heat of the sun, are full framed, robust and vigorous, being endowed with short, crisped and coarse hair, and a skin whose colour shields them from the destructive fierceness of the solar rays. In the

middle latitudes, where the means of subsistence are readily procured, and the vicissitudes of season are never remarkably severe, we find the human frame in every variety of development, and distinguished by fairness and delicacy of complexion. But on leaving these favoured regions behind us, and visiting the far northern portions of the earth, we see man, like most of the other productions of nature, stunted and dwarfish, displaying little or no mental energy, barely capable of securing the scanty subsistence allowed him by the rigours of his situation, and maintaining an existence scarcely superior to that of the whale or seal, the hunting of which constitutes his highest ambition, as their flesh and oil are his greatest luxuries.

Since it is not only possible, but unquestionable, that the whole human race are varieties of the same species, most probably descended from one male and female, it remains for us to show in what manner the descendants of this stock may have reached America, and whether our observations can be supported by arguments drawn from the condition of the new world. A reference to a map of the globe will show us that immediately within the arctic circle, the eastern extremity of the old continent is separated from the new by a strait which is but thirty-nine miles across, and this is solidly frozen over during the severities of winter. Kamtschatka, the extremity of Asia, situated between the fortieth and fiftieth degree of north latitude, is peopled by natives who are thoroughly accustomed to endure all the rigours of this climate, and is provided with many animals equally capable of existing through all its inclemencies. Under such circumstances we

can see no difficulty in concluding, that from the eastern extremity of Asia, both men and animals have passed to America, and subsequently been multiplied over the whole continent. In regard to man, it is not necessary to insist that he passed to the American shore during winter, since the distance is not too great for us to believe that even the rudest navigators, when driven by stress of weather from their own coast, (as often happens to the Eskimaux,) could, with little difficulty, reach this continent, where they would be compelled to remain by necessity, or induced by a disposition either to extend their acquaintance with a strange land, or to seek for a more agreeable place of abode.

The Aleutian islands, which are very numerous, and form an almost perfectly continuous chain, beginning with Behring's island, and extending from opposite to Kamtschatka, in about the fifty-fifth degree of north latitude, to Alyaska, the same parallel in America, may have afforded a much easier and more certain approach, and that without appearing at all extraordinary to the voyagers themselves, who might pass from one isle to another without having any idea of the land to which they were going. These islands are in the same parallels of latitude as the greater part of Labrador, Hudson's bay, &c. where even Europeans are able to endure the climate during the severest seasons. There is, in fact, the most irrefragable testimony to prove that the rein-deer cross over in vast herds on the ice, subsisting on the moss found in these islands during their passage.

In strictness of reasoning we have nothing to make it absolutely necessary that we should refer the peo-

pling of America to so recent a period as the separation of the old and new continents by Behring's strait. There is neither extravagance nor impropriety in the opinion that the two continents were originally one, and being continuous, the only difficulty is removed that could be urged against the approach of population from the extremity of Asia. But, in addition to all the reasons that can be urged in support of the doctrine, we maintain it should not be forgotten that there are strong evidences derived from astronomical and geological observations, proving the axis and poles of our globe to be not now precisely where they originally stood. It is therefore very unfair to decide against the probability of peopling America from the extremity of Asia, if we reason from the existing climate of the countries adjacent to East cape, or cape Prince of Wales, the two nearest points of Asia and America.

The greatest difficulty thrown in the way of this opinion, was thought to be the striking difference between the Eskimaux and the common Indian, seeming to prove that they were derived from different races or kinds. We are informed in Crantz's History of Greenland, that the Moravian missionaries who visited the countries inhabited by the Eskimaux, were much surprised to find that they were in all respects similar to the Greenlanders, and made use of the same language; showing that the Eskimaux had sprung from the same race, and had gradually reached their present residence from the extreme northern parts of Europe. This fact, now rendered undeniable by more recent researches, entirely invalidates the conclusion that the Eskimaux were derived from another

species. The resemblance existing between these people and the Siberians, Kamtschadales, Tunguse, &c. is manifest, and notwithstanding they differ in many respects from other inhabitants of the new world, they are undeniably descended from the same parent stock, coming from different parts of the globe. The copper-coloured natives of America, who are the most numerous of the aborigines, approach more closely to the Asiatic Tartars in colour and stature, and this because they are descendants of that race arriving in America from the extremity of Asia.

The land animals *common* to the old and new world doubtless reached America by the same route with the human race; but, the species which are *peculiar* to America were originally placed on this soil, as we find no traces of their existence in Asia or elsewhere. The first inference is drawn because the community of species renders it necessary: the second is a fair and natural induction from the exclusive existence of certain species in this country, as we see no reason why *animals* may not have been from the beginning peculiar to America, as that creatures of a singular construction should be found exclusively pertaining to New Holland. This last named country, differing from all others in its animal and vegetable productions, is peopled by human beings, degraded and abject it is true, but still a variety of the common stock whence all mankind have sprung.

Those who endeavour to dispute the correctness of the doctrine we support, state that if America were peopled from the shores of Asia, many

thousand years must have elapsed subsequent to the creation, before the population of the old world could have become sufficiently numerous to extend to its remote borders, and thence attain the American continent. It is also repugnant to their ideas that so large a part of the globe should have remained during "so long a time" unpeopled, or only tenanted by inferior animals. This is truly a convenient mode of objecting, but unfortunately for the theorist, duration of time is a very immaterial circumstance in the great operations of nature. If we may credit the testimony of our senses, and rely on our reason when guided by the clearest lights of geological science, many ages elapsed after the creation of our globe, and numerous races of inferior animals, previous to the existence of man. In very ancient strata, forming the crust of the earth, organic remains of various animals are preserved, but not a single relic of the human kind has yet been obtained from similar situations. He certainly forms a poor idea of DEITY who attempts to measure HIS power or works by notions drawn from human art, or supposes, because one part of the globe must have remained even ten thousand years "in one vast uninhabited solitude," that it is therefore repugnant to all the operations of the wonderful system of nature. With as much correctness might he conclude that the time required by the planet Herschell to describe his orbit around the sun should be reduced to the same duration as that necessary for the Earth, or Mars, or Venus—because to his comprehension the orbit of Herschell is almost unimaginable.

Another objection, founded on a similar mode of

viewing the subject, has led Mr. JEFFERSON and others to believe that the number of different languages spoken in North and South America is incompatible with the idea of so recent an arrival on this continent as even three or four thousand years. "How many ages," says Mr. J. "have elapsed since the English, the Dutch, the Germans, the Swiss, the Norwegians, Danes and Swedes, have separated from their common stock, and yet how many more must elapse before the proofs of their common origin will disappear? A separation into dialects may be the work of a few ages, but for two dialects to recede from each other until they have lost all vestiges of their common origin, must require an immense course of time, perhaps not less than many people give to the age of the world."*

Granting, as we are perfectly willing to do, the great lapse of time which would be requisite for the production of such radical changes, we do not think the objection derived from the languages more solid than those heretofore mentioned. As far as the researches of philologers have extended, we do not find that there is so much difference in the dialects of our aborigines as the arguments of these objectors would imply. Throughout a large mass of this native population a very perceptible connexion of language is apparent, and the relation to a parent stock is fairly evident. Even allowing that the amount of difference is as great as could be desired by our opponents, the comparison of the aboriginal dialects with those of European nations is by no means a correct mode of de-

* Notes on Virginia, p. 148.

ciding the point. If, according to our idea, people reached this country at different times from the extreme north of Europe or the north-east of Asia, the immense extent of country they were gradually to be scattered over, the new situations they were placed in, the new objects by which they were surrounded, and the new modes of life they assumed, would all conspire to produce a change in their language in a much shorter time than could take place on the old continent, where their wanderings must have been, not only comparatively circumscribed, but their modes of living subject to very few variations. A reference to well authenticated and recently observed facts, will show how great an influence is exerted over language by these causes. Indian nations, which have commenced their migrations in the northern and eastern parts of this continent, and journeyed to the western regions, have on their route detached various colonies from their main body, and these, in many instances, now differ so much in language from their parent stock, as to exhibit none but faint traces of relationship. If changes of this kind can be produced under such circumstances, what difficulty is there in believing, that still greater could occur, when the whole extent of this vast continent was before the original adventurers, and the last comers might not only be separated from the first by thousands of miles, but live under other skies, and be surrounded by natural objects of a totally dissimilar character.

In the present condition of our knowledge, we have no right to state that the traces of affinity between the American dialects are entirely obliterated; it would be far more correct to say that we do not

possess the means of making the necessary inquiries and decisions; our knowledge of their languages is confined to a few meagre vocabularies, frequently derived from persons whose statements cannot be implicitly relied on, however correct their intentions may have been, to say nothing of the almost insuperable difficulty of writing such languages from the hearer's idea of their pronunciation. We may with sufficient correctness trace the descent of words in our own language from the Hebrew, Sanscrit, &c. because we have established signs to indicate the ideas, and we have no doubt but that the same could be done to nearly an equal extent with our aboriginal tongues, provided we enjoyed a similar advantage of written characters, a proper knowledge of their languages, and a better acquaintance with the natural and other objects most frequently the subjects of their conversation.

Considering all the essential circumstances which are entirely wanting in this inquiry, we can place very little reliance on inferences from the aboriginal languages, more especially such as were drawn by a late writer, respecting the affinities of dialect between some of our Indians, and that of the Yolofs, the blackest of the African tribes. We must believe that these affinities were either totally accidental, or founded in misconception, arising from the nature of the subject, or rather from want of necessary intimacy with the languages examined. It may be taken as a very safe rule of judgment, that a man, whose knowledge of any language is derived exclusively from books, however perfectly he may be able to judge of its philosophy or grammar, can have but

few and faint ideas of the nice shades of distinction in the value and application of a very large proportion of words in such tongue, and by consequence, is very little qualified to do more than *conjecture* their affinities with words used by a people living under totally different circumstances.

The learned *Pennant*, in treating of this subject, expresses his belief that the inhabitants of the American continent were originally derived from Eastern Asia, and supports this conclusion by an examination of the customs common to the inhabitants of both continents.

"The custom of scalping, says he, was a barbarism in use with the Scythians, who carried about them at all times this savage mark of triumph: they cut a circle round the neck, and stripped off the skin, as they would that of an ox.* A little image, found among the Kalmucs of a Tartarian deity, mounted on a horse, and sitting on a human skin, with scalps pendent from the breast, fully illustrates the custom of the Scythian progenitors, as described by the Greek historian. This usage, as the Europeans know by horrid experience, is continued to this day in America. The ferocity of the Scythians to their prisoners, extended to the remotest part of Asia. The Kamtschadales, even at the time of their discovery by the Russians,† put their prisoners to death by the most lingering and excruciating inventions; a

---

* *Herodotus*, lib. iv.—Compare the account given by the historian with the Tartarian *icunculus* in Dr. PALLAS' Travels, i, tab. x. *a*.

† Hist. Kamtschat. 57.

practice in full force to this very day among the aboriginal Americans. A race of the Scythians were styled Anthropophagi* from their feeding on human flesh. The people of Nootka Sound still make a repast of their fellow creatures,† but what is more wonderful, the savage allies of the British army have been known to throw the mangled limbs of the French prisoners into the horrible cauldron, and devour them with the same relish as those of a quadruped.‡

"The Scythians were said, for a certain time, annually to transform themselves into wolves, and again to resume the human shape.§ The new discovered Americans about Nootka Sound disguise themselves in dresses made of the skins of wolves and other wild beasts, and wear even the heads fitted to their own.‖ These habits they use in the chase to circumvent the animals of the field. But would not ignorance or superstition ascribe to a supernatural metamorphosis these temporary expedients to deceive the brute creation? In their march the Kamtschadales never went abreast, but followed one another in the same track.¶ The same custom is exactly observed by the Americans.

"The Tungusi, the most numerous nation resident in Siberia, prick their faces with small punctures,

---

* Mela, lib. ii. c. i.

† Voyage ii.

‡ Colden's Five Nations, i, 155.

§ Herodotus, lib. iv.

‖ Voyage ii, 311, 329.—A very curious head of a wolf, fitted for this use, is preserved in the *Leverian* museum.

¶ Hist. Kamtsch. 61.

with a needle, in various shapes; then rub charcoal into them, so that the marks become indelible.* This custom is still observed in several parts of America. The Indians on the back of the Hudson's Bay to this day perform the operation exactly in the same manner, and puncture the skin into various figures, as the natives of New Zealand do at present, and as the ancient Britons did with the herb *glastum*, or woad,† and the Virginians, on the first discovery of that country by the English.‡ Herodian delivers down to us this custom of the Britons:—He says that they painted their bodies with figures of all sorts of animals, and wore no clothes lest they should hide what was probably intended to render themselves more terrible to their enemies.

"The Tungusi use canoes made of birch-bark, distended over ribs of wood and nicely sewed together.§ The Canadian and many other American nations use no other sort of boats. The paddles of the Tungusi are broad at each end; those of the people near Cook's river and of Oonalaska are of the same form.

"In burying of the dead many of the American nations place the corpse at full length, after preparing it according to their customs; others place it in a siting posture, and lay by it the most valuable clothing, wampum, and other matters. The Tartars did the same, and both people agree in covering the whole with earth, so as to form a *tumulus*, barrow,

* Bell's Travels, i. 240, 8vo.
† Herodian in Vita Severi.
‡ De Bry, Virginia, tab. iii. 111.
§ Isbrandt Ides in Harris' Coll. ii. 919.

or carnedd.* In respect to the features and form of the human body, almost every tribe found along the western coast has some similitude to the *Tartar* nations, and still retain the little eyes, small noses, high cheeks, and broad faces. They vary in size from the lusty Calmucs to the little Nogaians. The internal Americans, such as the *Five Indian* Nations, who are tall of body, robust in make, and of oblong faces, are derived from a variety among the Tartars themselves. The fine race [tribe] of *Tschutski* seem to be the stock from which those Americans are derived. The Tschutski again from that fine race of Tartars, the *Kabardinski*, or inhabitants of Kabarda."†

Independent of all other arguments in favour of the Asiatic origin of the aboriginals of America, the circumstance of but *one species* of the human race existing throughout the world is sufficient to reduce us to the necessity of acknowledging that mankind have descended from one parent stock, however their external appearance may have been modified by accident, disease, or situation. We are aware that some persons talk of the possibility of there having been various centres of creation to the human race, as among inferior animals; but we consider it very unphilosophical to suppose the existence of various centres of *creation* for the *same* species. Occasionally we hear still more ridiculous opinions advanced by persons who have not been at the trouble of examining the facts which have been collected on the subject,

---

* Compare Colden, i. 17, Lafitau, i. 416, and Archæologia, ii. 252, tab. xiv.

† Pennant's Introduction to the Arctic Zoology, p. 260.

are desirous of rendering themselves notorious by supporting any opinion, however absurd.

Thus far we have paid a deference to those who are unwilling to suppose that this continent was peopled from the old, and we have bestowed on their arguments a sufficient degree of attention.* But, as we have already hinted, all this discussion, relative to the human inhabitants of this continent, may be dispensed with; first, because the human race, from the equator to the poles, are one and the same, without presenting a single *specific* difference; and, in the second place, because a very adequate and perfectly natural means of approach is given, by which all the results desired could be readily produced. We have shown that limitation of time relates merely to our own narrow conceptions of its duration, and has reference neither to the DEITY nor to the order of nature; nor is it rendered necessary by any knowledge we possess relative to the creation of the world. Even allowing a most immense lapse of ages to have intervened from the creation to the peo-

* The theory of Clavigero, which supposes that a country fifteen hundred miles in length, and of an unknown breadth, was sunk between America and the old continent, and that by this land the human race anciently passed to this country, is too extravagant and unfounded to require more than a passing notice. Instead of having islands or regions sunk in the neighbourhood of the American shores, they are continually forming and increasing with great rapidity, being almost uniformly founded by the labours of the coral molluscæ, and after being built up by them from great depths to the surface of the ocean, collect weeds, sand, and other matters, for the commencement of a soil.

pling of this continent, we should rather discover in it a proof of the correctness of our position, than a circumstance repugnant to the plan of nature. Had a race of men been created on this continent simultaneous with that established in the old world, the vast increase of population would have long since required more than the ordinary devastation of human life, by pestilence, famine, and murderous war.

An idea of creation, more consonant with enlightened intelligence than the one recently glanced at, is that which considers the ETERNAL as having given existence to a few laws, or rules of action, which, through his omniscience, comprise all subsidiary operations, and by their influence the whole admirable system becoming in due succession developed and perfected—each joined to each in proper corelation, and all approaching his immediate presence by a point too ineffably distant to be appreciated by finite comprehension. Such an evaluation of the plan of divine providence, or creative power, would shame us out of theories in which we attempt to reduce infinitude to our own standard, and mete out the operations of the mighty system of nature by our own miserable span of three score and ten years!

SECTION II.

General Character of the American Indian.

IN various situations the North American Indians exhibit very considerable differences in stature, colour, and physiognomy; their medium height may be stated to correspond with that of the Europeans,

ONGPATONGA.

(Big Elk)

Chief of the Omawhaws.

Engraved by Hugh Bridport from an original Painting by J.Neagle.

though many individuals may be found in various tribes far exceeding the ordinary size. Their colour varies from a cinnamon brown to a deep copper colour, and some that I have seen were rather of an olive yellow hue. They almost universally have black, straight and rigid hair, though it frequently appears more harsh from their modes of dressing it, than it otherwise would be.

The features of the face are all large and strongly marked, if we except the eyes, which are generally deep seated, or sunk in large sockets, and placed rather horizontally; in this respect, and in general beauty of person, they more nearly resemble the European than any other variety of the human race. The forehead is most commonly low, somewhat compressed at the sides, and slightly retreating from the perpendicular. The facial angle is about eighty degrees. The nose is generally elevated from the face, and sometimes prominent, or even arched; the cheek bones are high and widely separate; the angle of the jaw is broad and the chin square. These latter circumstances give a peculiar fullness to the lower part of the face, and occasions much of the remarkable expression of the Indian countenance.

The Indians have been often supposed to be naturally destitute of hair on their bodies, but this deficiency is produced by the sedulous attention with which they eradicate the hair from the chin and other parts of the body. The hair of the head is also in great part removed, a small lock being usually left on the centre or crown, which is commonly decorated with feathers, porcupine quills, or other ornaments.

The habit of painting the body, either on occasions of ceremony or preparatory to battle, is very universal among the Indians, and hence vermilion has always been a substance of great value to them. Under ordinary circumstances, where this pigment is not to be obtained, they employ various coloured clays, charcoal, &c. which are smeared over different parts of the skin in fantastic figures.

To estimate the moral character of the Indians correctly, our inferences must be drawn from tribes undebased by their proximity to the whites, or from periods which preceded the introduction of European vices and corruptions amongst them. It is thus that the venerable and excellent HECKEWELDER gave his valuable recollections of the Lenapes or Delawares, not as they were at the time he wrote, but as they had been when he first knew them, many years before. Born and nurtured in the most uncontrolled liberty, the restraints of civilized life have as yet only served to bring the Indian still lower than the quadruped tenants of the forest that have been subdued by the white man. Instead of displaying the energies of nature, improved by cultivation, the civilized aboriginal has sunk into a state of hopeless apathy, incapable of any thing better than an imitation of the worst vices of the worst of men.

But, when free, in his native wilds, the American displayed a form worthy of admiration, and a conduct which secured him respect. Brave, hospitable, honest and confiding, to him danger had no terrors, and his house was ever open to the stranger. Taught to regard glory as the highest reward of his actions, he

became a stoic under suffering, and so far subjugated his feelings as to stifle the emotions of his soul, allowing no outward sign of their workings to be perceived. His friendships were stedfast, and his promises sacredly kept; his anger was dreadful; his revenge, though often long cherished, was as horrible as it was sure; necessity and pride taught him patience—habitual exercise made him vigilant and skilful; his youth was principally spent in listening to the recital of his father's and ancestors' deeds of renown, and his manhood was passed in endeavouring to leave for his children an inducement to follow his example.

Grave, dignified and taciturn, under ordinary circumstances—in the assembly of his nation, the Indian frequently became fluent, impassioned, eloquent, sublime. With few words, and no artificial aid, drawing his images exclusively from surrounding objects, and yielding to the influence of his own ardent impulses, he roused his friends to enthusiasm, or inspired his enemies with dread, as he depicted, with few and rapid touches, the terrors of his vengeance, or the horrible carnage of his battles.

An Indian suffering with hunger complained not—nor when long absent from home expressed emotion on his return.—"I am come," would be his simple salutation—"it is well," the only reply. When refreshed by eating and smoking, he related the story of his enterprise to his assembled friends, who listened in respectful silence, or only testified their interest in his narrative by a single ejaculation.

The Indians almost universally revere the aged, and are exceedingly indulgent to their offspring.

whom they rarely chastise, unless by casting cold water on them. They are not so kind to their women, who, as a general rule, are treated rather as domestic animals than as companions, and are seldom exempted from severe toils, even when about to give birth to their children. Notwithstanding this, the women appear contented with their situation, and not unfrequently exhibit excellent traits of character. At times their jealousy, or other depressing passions, lead them to the commission of suicide, which is particularly frequent among some of the tribes. Indian habits of thinking, varying with their modes of education, differ very much in different nations. The want of chastity before marriage is not universally considered as a loss of character, neither is incontinence in the female, after marriage, regarded as a crime, provided the husband gives his consent. Yet the same people will treat as infamous, and even put to an ignominious death, a woman who receives the addresses of another man without permission of the husband. The number of wives taken by the men is most commonly limited only by their ability to maintain them, as almost all Indians are polygamous. Their wandering modes of living and precarious subsistence, render increase of population far inferior among them to what it is among the whites.

The government to which they submit, is that exercised by their chiefs, who are, with very few exceptions, chosen in consequence of their superior courage, physical strength, or great experience and wisdom. The deference paid to them is not at all to be compared with that manifested by Europeans to their rulers; it is a respect for qualification and

standing, but confers no other privilege than that of leading them to battle, or directing the movements of their camp; it does not entitle the individual to interfere with the rights of others of his tribe, nor can his will be carried into effect, unless it be supported by the general opinion of his people.*

The most universal and enduring passion among the Indians is that for warlike glory. The earliest language he hears is the warrior's praise—the first actions he is taught to perform have for object the eventual attainment of this distinction, and every thought is bent towards the achievement of heroic deeds. Hence death is despised, suffering endured, and danger courted: the song of war is more musical to his ear than the voice of love, and the yells of the returning warrior thrill his bosom with pleasing anticipations of the time when *he* shall leave blood and ashes where the dwelling of his enemy stood, and hear the triumphant shouts of his kinsmen, responsive to his own returning war cry!

If we except their skill in hunting, and the great excellence of observation, by which they can detect the footsteps of game or of their enemies, we must admit that the Indians have but little knowledge, and their acquaintance with mechanic arts is still less perfect. They construct lodges with skins, bark, or earth, sustained by rude poles; make canoes of

* Tacitus, in his excellent account of the ancient Germans, informs us that their leaders were chosen in a similar way. The reader may derive much pleasure from examining his 4th Chap. de Moribus Germaniæ, beginning "Reges ex nobilitate duces ex virtute sumunt," &c.

bark, shape bowls out of wood with vast labour, by the aid of sharp flints and other stones; make a rude and sun-dried pottery, fashion tobacco pipes of clay or stone, dress the skins of animals by rubbing them, when moistened with brains, until they are pliable, and from these skins form moccasins, pouches, &c. variously ornamented with porcupine quills, which they know how to dye of several brilliant colours.

They cannot be said to have any acquaintance with astronomy, if we except the ability some of them possess to guide their course by the polar star; their knowledge of medicine and surgery is exceedingly imperfect and rude, or more properly it consists of a very few actual remedies and a great deal of juggling mummery.*

Their modes of living vary throughout the countries they inhabit, according to the peculiar nature of circumstances. Those who reside where game is plenty, live entirely by hunting—others, in the neighbourhood of lakes and rivers, derive their support principally from fishing; many tribes raise small quantities of maize and tobacco. The Indians who live on the prairies or in level countries, are fond of horses, and are excellent horsemen, while such as frequent the forests are more remarkable for the celerity and sagacity with which they travel on foot.

Their ideas of Deity are very rude and imperfect.

---

* Lucretius gives a very interesting description of savage man, which may in a great degree be applied to the aboriginal inhabitants of America.—*See his 6th Book, line 920, beginning* "et genus humanum multo fuit illud in arvis."

though they all seem to have an idea of a future state, as well as of a great Spirit and Director of the universe. Many tribes have some notion of rewards and punishments in a future life; their ideas on this subject are necessarily founded on their appreciation of what is at present agreeable or disagreeable to themselves. They believe in bad as well as good spirits, and are as much addicted to the worship of the former from fear, as they are to adore the latter from love and respect.

The Eskimaux, who inhabit the most northern parts of North America, differ considerably from the aboriginals generally diffused over this country, as they are far inferior in stature, and the features of their faces are extremely harsh and disagreeable to Europeans. Their cheek bones are very prominent, their cheeks tumid and somewhat globose, their noses small, flat, or sunk, and their whole physiognomy resembling considerably that of the most ill-favoured Tartar tribes.

The appearance of the Eskimaux varies from Prince Williams' sound, where they are of the largest size; as they extend to the more northern regions, to the coast of the Icy sea and the maritime parts of Hudson's bay, Greenland and Terra de Labrador, they become dwarfish, in comparison with the European, and have heretofore given rise to accounts of pygmies inhabiting these icy regions.

In the Eskimaux we have an admirable exemplification of the effects of severe climate on the human race, for the extreme cold seems in them to have repressed all superfluity of growth, as if to accommo-

date the body to a situation where food and raiment cannot be procured without great difficulty and danger.

SECTION III.

Dental System of the Human Race.

32 Teeth
- 16 *Upper*
  - 4 Cutting
  - 2 Canine
  - 10 Grinders.
- 16 *Lower*
  - 4 Cutting
  - 2 Canine
  - 10 Grinders.

In the upper jaw, the first cutting tooth is terminated inferiorly by a straight line; it is shaped like a wedge, and is larger than the second. This latter is straighter than the first cutting tooth, and terminates by two lines, which form between them an open angle, that is to say, its point is obtuse. Both these teeth are rounded externally, and their internal surface is slightly excavated. The canine has exteriorly the form of the second grinder, but differs from it, because its internal surface is salient instead of being depressed; this gives it a thickness not to be found in the other.

The first and second grinders (which are called *false molars*, on account of their slenderness when compared with the thickness of the true grinders,) resemble each other entirely in form and size. Externally examined, they are but slightly distinguished from the second cutting, and canine tooth; but they have on the crown two very thick and very ob-

tuse tubercles, one on their internal, the other on their external border, separated by a deep groove.

The next tooth is a true grinder,* and is the largest of all the teeth in the upper jaw. On its external edge it is divided into two equal parts, forming two very obtuse tubercles, by a deep groove which only comes to the middle of the crown, and when there, separates into two very slight branches, which form, with the principal groove, nearly the same angle as they form with one another. On its internal edge this tooth is also divided, but unequally, by a groove situated much nearer its posterior than its anterior edge, so that the tubercle produced by this part of the groove is stronger than that of the other portion: the tubercles on this inner edge have their summits much nearer to the middle of the tooth than those on the opposite border.

The two succeeding grinders are of the same size and form, having on their external edge two equal tubercles, formed by a groove which divides the tooth to the middle of the surface, where it parts in two branches, like the groove of the great grinder; but these branches sometimes extend even to the anterior and posterior edges of the tooth. Their internal edge is composed of a single but very obtuse tubercle, and these anterior and posterior parts are separated by a deep depression.

In the lower jaw, the first cutting tooth is one-third straighter than that in the upper jaw, and is

* True grinders, or simple grinders, are all teeth covered with tubercles, evidently fit for crushing or triturating food.

equally terminated by a straight line; the second is nearly of the same size as the first, and terminates by a point analogous to that of the upper jaw, but this point is much nearer to the first cutting tooth than to the canine.

The canine resembles the one described in the upper jaw, except that it is not so thick.

The two false grinders have also much resemblance to those of the upper jaw, except that they are somewhat smaller, their external tubercle is much thicker than the internal, and a projection on their middle divides the groove which separates them into two parts, and forms their two principal tubercles.

The succeeding grinder, which is also the largest of this jaw, is divided into four principal parts, or four large tubercles, by two grooves which cross each other at right angles at the middle of the tooth; and these tubercles present irregular inequalities, produced by some isolated depressions, and also by some slight branches of the principal grooves. The two succeeding grinders are smaller than the preceding, and present the same principal divisions, that is, they have four tubercles and two grooves; but the groove which cuts the tooth transversely is deeper than that running from behind forwards, which makes it sometimes scarcely perceptible on the posterior half of these teeth. The three last teeth are true grinders.

In their reciprocal position, the lower teeth, as far as the middle cutting teeth, are more advanced anteriorly than the upper ones, that is to say, the

posterior part of the lower teeth correspond to the anterior of their analogues in the opposite jaw, which appears to show the reason of the narrow dimensions in the lower middle cutting teeth, compared with the upper, and all are opposed to each other crown to crown, except the cutting teeth, which stand face to face; the lower by their anterior face to the posterior face of the upper.*

---

* The *Dental Systems* of the different genera described in this work, are translated from FREDERICK CUVIER'S celebrated work, "Des Dents des Mammifères Considerées comme Caractéres Zoologiques."

CHAPTER II.

Order III.* Feræ.—*Beasts of Prey.*

SECTION I.

Under this order are arranged the animals which are unguiculated or provided with claws, are destitute of hands to their anterior extremities, and possess the three sorts of teeth called carnivorous, false molars, and tuberculous; those which have the teeth either entirely or partially tuberculous, feed to a greater or less degree on vegetable matter, while such as have their teeth studded with conical points, feed principally on insects. In proportion to the sharpness of the teeth we may decide whether or not they are exclusively carnivorous.

In all the species belonging to this order, the articulating or condyloid process of the lower jaw is semicylindric and transversely placed, corresponding so precisely with the glenoid cavity of the temporal bone, that it can only be moved in one direction, or is incapable of any motion except that of opening and shutting.

In some species the zygomatic arches are very large, and the skull, especially at the posterior part,

---

* The second order, (quadrumana, or four handed animals,) is not found in North America.

is much compressed, which gives the space requisite for the large and powerful muscles concerned in the act of mastication. Their brain is destitute of the third lobe, although sufficiently furrowed, and does not cover the cerebellum. The orbit of the eye is not separated by bone from the temporal fossa or hollow, in the skeleton.

Beasts of prey possess the sense of smelling in a high degree of perfection, and their olfactory nerves are generally spread out over very numerous plates of convoluted bony texture. They can turn the fore-arm, but by no means with the same facility as is done by the quadrumanous animals, and their fore-limbs are uniformly destitute of thumbs capable of antagonizing the other fingers.

The stomachs of beasts of prey are, generally speaking, simple, and their intestines are less voluminous than those of other quadrupeds, on account of the greater degree of facility with which the digestion of animal matter can be effected.

The greatest part of these creatures are forced, by the necessity of procuring animal food, to attack and destroy the lives of other animals, which they are well qualified to do by their great muscular strength, and the offensive armour of teeth and nails with which they are provided.

As the forms and particulars of construction are very various in these animals, we may expect corresponding variations in their habits and actions. Hence they have been arranged in different families, connected with each other by various relations.

SECTION II.

Family I.—Cheiroptera; *Wing-handed.*

The animals comprised in this family are generally known by the name of bats, and are strikingly characterised by the manner in which the skin of the body is extended between and connects the anterior and posterior extremities, and is also prolonged over the bones of the fingers, so as to form a large and efficient wing. Their clavicles, or collar-bones, are necessarily strong, and the scapulæ, or shoulder-blades, are large, in order that the shoulder-joint may have the necessary degree of solidity. The fore-arm is incapable of supination,* as the power of flying would thereby be impaired. Bats have two teats, which are situated on the chest.†

Dental System of the Bat.

This family has been divided into many genera on account of the differences of the cutting teeth, and the modifications observed in the organs of sense and motion. In fact these are almost the only particulars in which bats differ from each other; in all, without

---

* The hand is said to be *prone*, when the palm is turned downwards, or towards the earth; *supine*, when the palm is turned upwards.

† Penis illis, generis humani more, propendens; character profecto talibus animantibus mirum.

exception, the true grinders and canine teeth are of the same form and number; yet they differ in the quantity of their false molars, which do not always correspond with the number of their cutting teeth, and in other modifications on which the genera of this family are founded.

In the upper jaw, the canine is strong and angular, having the general form of this sort of tooth, and receives by an anterior, and sometimes very deep depression, as well as an internal very deep depression, a triangular form. In some species there is a salient point on the exterior of this tooth, which in all the cheiroptera seems to be a very important instrument in securing their prey, or as a weapon of attack and defence.

The false molars, which are most developed, and may be considered regular in these animals, have a point, and a base which extends from their internal and posterior side, sometimes producing a small point at its anterior part; these teeth always have two roots. The molars are three in number, the first and second having the same form, and differing but little in size. They present on their external surface two parallel prisms, a section of which is terminated by a point at each of its angles. These two prisms rest upon a base which is developed on the interior of the tooth, and is composed on its anterior part of a slightly salient and triangular tubercle, and at its posterior part, by a small simple point. The last molar, one half smaller than the others, appears to be one of these first teeth, obliquely truncated at its external and posterior part on account of the sud-

den termination of the maxillary bone, as if the half of the posterior prism was removed, as well as the like posterior point.

In the lower jaw, the canines, equally strong as those of the upper jaw, are rounded in front, but flattened on the posterior surface, and strongly grooved at their base on this part.

The regular false molars are slender, with a middle principal tubercle, that is to say, having all the general characters of these teeth. The molars, three in number, are composed of the two prisms, which we have seen form an essential part of the molars in the opposite jaw; but where they present one of their faces outward in the upper jaw, in the lower they present one of their angles, and the point of this angle is commonly stronger than those of both the others. The two first of these teeth are of equal size, and the third a little smaller, because the posterior angle is not entirely developed.

In their reciprocal position, the inferior canines are in advance of the superior, as in the carnivorous animals, and the projections of the grinders interlock with the hollows of the opposite teeth.*

---

* The author has been informed by Prince Musignano, that the celebrated Temminck of Amsterdam, has made some recent discoveries relative to the dental system of the Bat, which will most probably produce a considerable change in the classification of these animals. Should the observations of Temminck be published in time, we shall give them in the appendix to this work.

Genus II.—Bat; *Vespertilio*; L.

Gr. Νυκτερις.
Germ. Fledermaus, Speckmaus.
Dutch. Vlarmuis, Vledermaus.
Swed. Flædermus, Læderlapp.
Russ. Letukscha, Neotopyr.

Fr. (*anc.*) Chaude souris, Ratepenade. (*Mod.*) chauve souris.
Ital. Pipistrello, nottola, sportiglione, Rattopennago, &c.
Span. Murciegalo, Murceguillo.
Portug. Morcego.

GENERIC CHARACTERS.

Dental Formula.

32 Teeth:

- 14 Upper: 4 Incisive, 2 Canine, 8 Molar. — 2 False Molars: 2 regular, 0 anomalous. — 6 Molars.
- 18 Lower: 6 Incisive, 2 Canine, 10 Molar. — 4 False Molars: 2 regular, 2 anomalous. — 6 Molars.

The anterior limbs, or arms and fore-arms of Bats, are peculiarly elongated, and the bones of the fingers are still more lengthened, exceeding the total length of the arm. It is over the finger-bones, especially, that the skin of the body is extended, in the form of a soft and delicate membrane, which thus constitutes wings as extensive and effectual as those of many birds. The pectoral muscles, which are the principal agents in moving the wings, are thick and strong, to correspond with the nature of the service they are to perform, and the middle of the sternum, or breast-bone, has a projection to give these muscles a large surface of attachment, resembling considerably a similar part in birds. In consequence of these arrangements they are able to fly with rapidity, and at great heights in the air.

These curious wings are provided with a short thumb, armed with a crooked nail, which serves them to hang by when they wish to repose, or to climb with against the sides of caverns or other places. Their hind feet are weak and divided into five equal toes, all armed with nails. The eyes of these animals are quite small, and their ears are often very large; these, together with their wings, form a vast membranous surface, almost naked, and exquisitely sensible.

The perfect wisdom of the Author of Nature becomes more clearly evident, in proportion as we carefully study the relations existing between his creatures, the situations they occupy, and the offices they are intended to perform. As our inquiries are extended, we feel continually incited to express our admiration at the excellent adaptation of means to the end, and are induced to consider with pleasure, from their appropriateness, beings which, from a superficial view, would be thought frightful or disgusting. This may be well exemplified by the animals now to be investigated; a slight glance at their mere external form and appearance presents them as disagreeable, almost deformed, or most probably useless. A judicious observation of their structure and modes of living causes admiration at the excellent contrivance of their organization, and convinces us that they may be eminently serviceable, even to mankind.

The Bat certainly seems to occupy a very equivocal rank in creation, since, though bearing a marked resemblance to a quadruped, a great part of his life

is spent in the air like a bird. Yet it is only in the latter circumstance that he can be compared with the feathered tribes, being not only destitute of beak, plumes and talons, but suspending himself in air by means of a velvet or leather-like membrane.

When the gray and dusky twilight succeeds the departing glories of the sun, myriads of insects, warmed into life and activity by his heat, take wing in search of their females, to increase the innumerable hosts of their own race. At the same moment the Bats, which have shrouded themselves during the glare of daylight, emerging from subterraneous recesses, or the gloomy vaults of time-worn ruins, speed with rapid flight along, glutting a voracious appetite on insects, which, but for their exertions, conjoined with those of other creatures, would soon swarm so profusely as to render the earth loathsome or uninhabitable.

The advantages of the Bat's peculiar structure are now seen—his soft and velvet wings, though plied with vigorous celerity, stir the air, but make no sound; their peculiarly delicate sensibility enables him to feel the proximity of every object, and unerringly directs his flight; his large ears catch every hum produced by the motions of his destined prey, and he noiselessly flits through the gloom, gathering a plenteous meal, and destroying great numbers of insects. His strong sharp teeth and powerful jaws are employed in seizing and crushing his prey with slight effort, nor does he relinquish the chase until the night is far advanced and the cravings of hunger are entirely satisfied.

The Bat flies with a tremulous flickering movement

of its membranous wings, and its progression is irregular, now rising with swiftness, then suddenly darting downwards, or to one side, with apparent capriciousness, though it is engaged in seizing its prey, which it distinguishes with great quickness. This disposition to dart at any object seen in the air is often employed for the destruction of Bats, as they are shot or struck down with a long switch or whip at the moment they descend to examine objects thrown into the air. In general the Bat flies at no great distance from the earth, though it occasionally ascends above the tops of trees or houses, and even much higher. During the time of feeding it appears to be continually in motion, searching for food with much diligence, as if conscious that the opportunity of procuring it would soon pass by.

When on the ground, it is very evident that the Bat is a quadruped, and what are commonly called wings are entirely analogous to the members of other four footed animals, though varying greatly from the original type. "The elbow is found near the knee; the fore arm is very long, and obliquely extended from above downwards, and from behind forwards, as far as the nose of the animal. The wrist is placed against the ground, and there is but one finger on the anterior extremity, which is the thumb. The knee is raised as high as the lower part of the rump, and the five toes of the hind feet are of equal length, and turned outwards. The arm is extended horizontally from the front to the back part, and the thigh vertically from above downwards; the arm is concealed behind the fore arm, and the thigh behind the leg; they are moreover enveloped in the mem-

branes which conceal the tail and all the hinder parts of the body. Besides the thumb seen on the anterior extremities, there are four other very long fingers, extending from the fore-arm, enveloped in the membrane, and folded near the elbow by their extremity."*

From these singularly lengthened extremities, the animal derives little or no assistance while on the ground, as it rests on the breast and belly, rather propped up than standing. In this situation the motions of the Bat are slow and heavy, more resembling the dragging along of the body and limbs than a fair and regular act of progression. It is by no means easy for the Bat to take wing, and some of the species cannot readily escape if placed on the ground; but it is an error to suppose that it is impossible for them to take to flight, while in this situation. Their mode of alighting or resting is, by fixing the hook of their hind feet to the projections of caves or old buildings, with their wings folded on their bodies, and their heads hanging down, until forced by hunger to resume their flight. This singular inverted position, is one which enables them to take wing with ease, inasmuch as they can launch themselves in air with great facility, merely by letting go their hold. In order to void its excrement, which is very frequently found in vast heaps in caves much frequented by them, they bend their bodies upwards, and extend the wing until they can lay hold of a projection with the hook on

* Daubenton.

the thumb. When this is accomplished they relinquish their hold with the posterior claws, and thus perform their evacuations, resuming their original inverted position, by renewing their hold with the claws of the hind feet.

The Bat is entitled to the place it holds in our systematic arrangements, from the circumstance of having paps or teats placed on the chest, analogous to those of the human race. They suckle their young, who remain firmly attached to the teat during the flight of the parent, until they attain a considerable size.

These creatures are not deficient in those affections, which, in other animals, are supposed to denote much sensibility, and always excite the sympathies of mankind. The Bat has been known to exhibit the most devoted attachment to her young, and forego all efforts at self-preservation, in order to be near when she could not release her captive progeny. The following circumstance made known by that enterprising naturalist, my friend TITIAN PEALE, will show to what an extent they may evince this feeling:

"In June 1823, the son of Mr. Gillespie, keeper of the city square, caught a young red Bat, (*Vespertilio Nov-Eboracensis*, L.) which he took home with him. Three hours afterwards, in the evening, as he was conveying it to the Museum in his hand, while passing near the place where it was caught, the mother made her appearance, followed the boy for two squares, flying around him, and finally alighted on his breast, such was her anxiety to save her offspring. Both were brought to the Museum, the young one

firmly adhering to its mother's teat. This faithful creature lived two days in the Museum, and then died of injuries received from her captor. The young one, being but half grown, was still too young to take care of itself, and died shortly after."

We have already glanced at the singular fact, that Bats have the power of directing their flight with perfect correctness, even when deprived of their sight. In 1793, Spallanzani put out the eyes of a Bat, and observed that it appeared to fly with as much ease as before, and without striking against objects in its way, following the curve of a ceiling, and avoiding, with accuracy, every thing against which it was expected to strike. Not only were blinded Bats capable of avoiding such objects, as parts of a building, but they shunned, with equal address, the most delicate obstacles, even silken threads, stretched in such a manner as to leave just space enough for them to pass with their wings expanded. When these threads were placed closer together, the Bats contracted their wings, in order to pass between them without touching. They also passed with the same security between branches of trees placed to intercept them, and suspended themselves by the wall, &c. with as much ease as if they could see distinctly. Similar experiments were made by JURINE of Geneva, who attempted to account for the fact by attributing it to the delicacy of the nerves expanded about the muzzle, ears, &c. Mr. Carlisle, who experimented in England with the large-eared Bat (*V. Auritus*) concluded that this faculty was owing to extreme acuteness of hearing, as the Bat, when its ears were covered, flew against objects, as if unconscious of

their presence; it is probable, however, that there was some unobserved source of fallacy in this experiment.

A much more satisfactory and philosophical mode of explaining this curious circumstance was offered by the celebrated CUVIER, who sheds light wherever he directs his attention. In a paper read May, 1796, this naturalist referred it to the exquisite sense of touch resident in the membranous skin forming the wings, ears, &c. as had been previously hinted at by Odier. During the flight of the blinded Bat, whenever it approaches any object, the air set in motion by its wings reacts against their surface with a greater or less degree of force, and being in this manner warned of the proximity of the object, it avoids injury by changing its course.

Immediately preceding thunder-storms, Bats have been known to take shelter in dwelling-houses in great numbers; no less than thirty were recently captured in the house of a friend, where they had thus entered for refuge against an approaching gust.

The Bat brings forth in the month of June and July, generally from one to three young at a birth, which are carefully suckled by the parent until they grow to a considerable size.

As soon as the cold weather approaches, the Bat retires to places of security, and frequently gathers in large clusters, apparently for the sake of warmth. They gradually become perfectly torpid, and in this state the circulation of the blood and other functions of the animal economy seem to be entirely suspended. With the return of the warm season they slowly acquire the ability to move, and when their torpor has entirely passed away, they again sally

forth to renew their wonted destruction of the insect tribe.

The singular structure and habits of the Bat have long since afforded the poets an emblem of darkness and terror, and induced them to consecrate this creature to Proserpine, their queen of Hades. Æsop, with his usual shrewdness of observation, has turned the Bat to good account in his fable of the war between the birds and beasts, in which he severely reproves those who in important affairs are disposed to belong to no party. He represents the Bat as unwilling to declare for either host, but to hover between both during the fight, in consequence of which it was no longer considered either as bird or beast, and was obliged to avoid appearing abroad until other animals had gone to repose.

The fact, as has already been shown, is, that the Bat is one of a large number of animals whose structure is adapted for activity and usefulness only when the light is feeble, and food is to be obtained.—However amusing it may be in poetry or apologue to consider such creatures as choosing night for their appearance from a desire of concealment; it is by no means allowable for students of natural history to forget that all beings must live in conformity to the laws of their organization, that the perfection of every species is relative to the situation in which it exists, and that our notions of beauty and deformity are neither true tests of the excellence nor importance of any inferior animal.

*

SECTION II.

Sometime after the preceding observations were written, I received a paper on Bats, by the distinguished GEOFFROY St. HILAIRE, published in the French Dictionary of Natural Sciences. As this learned man has devoted a great deal of time to the study of these creatures—as he has had the fullest opportunities of making observations—and as he may be relied on, I shall, for the benefit of my readers, introduce some of his remarks from the paper just mentioned.*

"The writings of naturalists attest the ignorance which formerly existed relative to Bats. Aristotle defined them as birds with skinny wings; he was not positive they were volatile, on account of their feet; but on the other hand, he could not resolve to view them as quadrupeds, since they were not provided with four distinct feet. His reflections on their want of tail and rump led him to theoretical notions, which were not based on any positive observation.

"Pliny speaks of Bats only to remark, that they are birds which bring forth their young alive, and suckle them.

"At the restoration of learning in Europe, naturalists confined themselves to copying the ancients.

---

* We anticipate, with great satisfaction, a paper on the subject of the bats of this country from that indefatigable and distinguished naturalist Capt. J. LE CONTE, who, during many years past, has been engaged in making the necessary observations. We understand that he has many new and very interesting species.

Aldrovandus first began to advance farther in relation to Bats, yielding uniformly to the prejudices of his time, he placed them in the same family with the ostrich, and the reason he gives is, that these two species of *birds* partake *equally* of the nature of *quadrupeds!*

"Scaliger makes out the Bat to be a perfectly marvellous being; he finds in it two and four feet; it walks without paws, and flies without wings—sees when there is no light, and becomes sightless when the dawn appears. It is, adds he, the most singular of all birds, because it has teeth, and is without a beak.

"The Bat has, like all viviparous quadrupeds, a double heart,* cellular lungs, suspended and surrounded by the pleura, a muscular diaphragm, interposed between the cavity of the chest and that of the belly, an ample and solid brain, and a skull composed of the usual number of pieces, joined to each other by sutures.

"They have the same sentient system, and the same organs of digestion and secretion. Their teeth are also of three sorts; their bodies equally covered with hair, and, as was long since known, without leading to the proper conclusion, their young are brought forth alive, and suckled at their teats, exactly as in all viviparous quadrupeds. Such is the degree of resemblance, that the smallest details of their organization suffice alone, and separately, to show that

---

* That is, with two auricles and two ventricles: the right auricle and ventricle to throw the blood through the lungs, the left, through the general circulation of the body.

they are true mammalia,* and must be classed with them.

"The Bat, though accustomed to move in the air like birds, nevertheless is sustained by very different instruments; hence all the anomalies observed in its structure are derived from the mammalious type.

"The parts which in birds answer to the fingers of the human body are almost effaced; they only exist in a rudimental form, attenuated and solidified with each other, whence it results that the hand of birds is nothing but a stump. The wing exists beyond this, supported and adjusted on the extremity of the member, and consisting of long terminal quills, that is to say, on a fair analysis, the most useful portion is actually composed of shoots or elements belonging to the epidermal or scarf-skin system.

"In the Bat, on the contrary, it is the fore-limbs themselves, and principally the hands, which are enlarged. If we can imagine the hand of an ape drawn out (as if through a wire-drawer's plate) and spreading from the wrist like rays through the segment of a circle, we shall have a clear notion of the construction of a Bat's hand.

"The thumb alone does not suffer the same modifications: it remains short, free from all connexions, and capable of very various movements; in this it resembles the thumb of monkeys, since it is not employed as an organ of flight; that it may preserve

---

* Or animals giving suck. It is to be regretted that we cannot express this term in English without circumlocution; the Germans have a word "saeugthiere" which conveys the true idea.

its ordinary function, and remain a finger as to use, it is maintained in its integrity—that is to say, it is provided with a last phalanx and nail.

"The four fingers, on the contrary, which by their excessive length change to instruments of flight, passing to so strange an employment, are no longer susceptible of the accustomed action; it is with much trouble and fatigue that the Bat occasionally is merely able to use them for the purpose of dragging itself along a horizontal plane, or to secure its young.

"Another anomaly renders these four fingers parcularly worthy of attention; they are not complete, being destitute of nails, and, what is remarkable, the terminal phalanx, which in all other instances is formed to suit the nail, is wanting also.

"These long finger-bones of the Bat answer the same end in their wings that the sticks of a parachute do to that instrument, that is, they are supports designed to enable a material to resist the air. This material in the Bat is a prolongation of the skin of the flanks: the back and the belly each furnish a layer, as we may ascertain by separating in two equal thicknesses the membrane of the wings. Notwithstanding that this membrane is formed thus, it always appears to us as a thin, transparent and slight network.

"As the bones of the hand diminish in thickness in proportion as they are increased in length, the integuments are, in like manner, thinned in proportion to their extension. It is, moreover, remarkable that this, which is here an effect of a general law of

organization, wonderfully completes the means of flight in the Bat, since more compact bones, or a thicker and denser membrane, especially at so great a distance from the moving power, would have increased the weight of the animal so much as to render its flight impossible.

"We may judge how much the anterior extremities are enlarged, by comparing them with the posterior, which are of ordinary dimensions. These are only partially included in the lateral membrane, the feet being free. The membrane has its last attachments on the tarsus, or instep, the little bones of which, projecting in front, in form of a spine, give the interfemoral membranes a firm hold.

"The toes of the hind feet are small, compressed, equal in length, and always five in number. They are all terminated by claws, or small horny plates, making a quarter circle, very sharp at the points, and remarkable for their equality and parallelism.

"The whole of the functions ordinarily performed by fingers seem concentrated in the hinder toes of the Bat, which are invariable in their forms, or they are, in reality, the only fingers possessed by this genus. We have heretofore shown that only one is found on the anterior extremities, the rest being virtually nothing but solid supports to extend or fold the membranous wings.

"When the Bat is not on the wing, we could scarcely imagine how it would use its limbs, in order to move on the ground; yet, when it is necessary, they employ them advantageously for the purpose. The folded wings then become fore-legs; they are sustain-

ed on four feet; they advance, and draw themselves along with sufficient quickness to justify us in saying that they run fast.

"To effect this, how much trouble, how many efforts, and how many different actions are necessary! At first, they reach forward, and slightly to one side, the extremity or stump of the wing, fastening the claw of the thumb on the ground; retaining thus a strong hold, they draw up the hind legs under the belly, and to start from this crouching position they raise themselves on their hinder parts, and tumble the whole body forwards. But as they only take hold of the ground with the claw of one wing, they advance diagonally, throwing themselves towards the fixed point; to make the next step, they use the other wing, and tumbling in the contrary direction, in spite of these alternate deviations, they move forwards in a right line. As this exercise is very fatiguing, they do not attempt it unless when in perfect security, or else when they have accidentally fallen on a level surface.

"In the latter condition, the Bat makes an effort to escape from it as speedily as possible, because, while thus situated, it is almost impossible to raise itself in the air. The wings are too extensive, and the struggles made, in general, merely produce a new fall; if, on the contrary, it can gain a high place, a tree, or a stump, it speedily makes its escape."*

Professor JACOB GREEN has kindly furnished us with the following note of his observations, made on

* See Dict. des Sciences Naturelles, Art. Cheiroptéres.

the Bat, in a cavern explored by him on the 1st of November, 1816.

"I this day visited an extensive cavern, about twelve miles south of Albany, N. Y. I did not measure its extent into the mountain, but it was at least three or four hundred feet. There was nothing remarkable in this cave, except the vast multitudes of Bats which had selected this unfrequented place, to pass the winter. They did not appear to be much disturbed by the light of the torches carried by our party, but, upon being touched with sticks, they instantly recovered animation and activity, and flew into the dark passages of the cavern. As the cave was, for the most part, not more than six or seven feet in height, they could very easily be removed from the places to which they were suspended, and some of the party, who were behind me, disturbed some hundreds of them at once, when they swept by me in swarms to more remote, darker, and safer places of retreat. In flying through the caves they made little or no noise; sometimes upon being disturbed in one place they flew but a few yards, and then instantly settled in another, in a state of torpor apparently as profound as before. These Bats, in hibernating, suspended themselves by the hinder claws, from the roof or upper part of the cave; in no instance did I observe one along the sides. They were not promiscuously scattered, but were collected into groups or clusters, of some hundreds, all in close contact. On holding a candle within a few inches of one of these groups, they were not in the least troubled by it: their eyes continued closed, and I could perceive no signs of respiration. On opening

the stomach of one of these Bats, it was found entirely empty; the species, I believe, was the *V. Noveboracensis*.

"While making some experiments in my laboratory at Princeton, in a cold dark afternoon in December, a good fire being in the stove, and the room being warm, a small reddish coloured Bat, (probably the *V. Noveboracensis*,) which had secreted itself behind some of the cases which held the philosophical apparatus, made its appearance. It flew a short time about the room, and then retired; I saw it, however, once or twice afterwards, in the course of the winter."

SPECIES I.—*Carolina Bat.*

Vespertilio Carolinensis.—GEOFF.

The essential characters of this species are the following:—the ears are oblong and of the length of the head; and partly velvet-like. The auricle or projecting portion of the ear, is half-heart shaped. The pelage is chesnut brown coloured above, and yellowish below.

This Bat is most like the common or murine Bat of Europe, (*V. Murinus*, L.) The ears are of middling size, showing no folds on their internal larger edge, and having the first half of their external surface covered with fine hairs. The auricle is almost heart-shaped; the tail is altogether enveloped by the interfemoral membrane, excepting a small point of its extremity, which is free. The hair is, at base, of a blackish ash colour.

As the name implies, this Bat is a native of Carolina, where it is found in the vicinity of Charleston. The first specimens were sent to Europe by Mr. Bosc, and described by GEOFFROY, in the eighth volume of the Annals of the Museum of Natural History.

SPECIES II.—*New York Bat.*

Vespertilio Noveboracensis. L.

Red Bat of Pennsylvania, figured in Volume VI. of Wilson's Ornithology.

Essential characters. The ears are short, broad, and rounded, and the whole of the tail is comprised in the interfemoral membrane.

The nose of this species is short, and rather pointed; the interfemoral membrane, which completely includes the tail, is velvet-like above, and of the same reddish brown colour as the back and upper part of the neck. The belly is of a paler colour, and there is a white spot at the origin of the wings. The hair covering the body is soft and furry.

This species is found in the state of New York, Pennsylvania, New Jersey, on the Missouri, &c.

SPECIES III.—*Hoary Bat.*

Vespertilio Pruinosus.—SAY.

Long's Expedition to the Rocky Mountains, Vol. i. p. 168.

The ears of this species are large and short not equalling the length of the head, and are hairy on

their outside, for more than half their length. The tragus* is very obtuse at tip, and arcuated or bow-shaped. The nostrils open at a distance from each other; the canine teeth are large and prominent; there is but one distinct cutting tooth on each side, placed very near the canine, and almost on a line with it; it is of a conical form, and furnished with a tubercle on its exterior base. The brachial membrane is densely hairy on the anterior margin beneath, and the interfemoral membrane is covered with fur.

The fur of the back is long, and of a black brown colour at base, then of a pale brownish yellow, then blackish, and then white; towards the rump dark ferruginous takes the place of the brownish yellow. The colours beneath, are similar to those of the back, but on the anterior portion of the breast the fur is not tipped with white, and on the throat it is of a dull yellowish white, and is dusky at base.

This Bat is nearly four and a-half inches long, and was common in the vicinity of Engineer Cantonment, where the expedition to the Rocky Mountains wintered. Mr. Thomas Nuttall, the justly distinguished botanist, observed it also at Council Bluffs. A specimen captured near Philadelphia, was presented to the Philadelphia museum, by the late professor Barton.

---

* That part of the external ear, which corresponds to the projection on the human ear, situated immediately next the face, over the joint of the jaw-bone; the antitragus is immediately opposite, and a little lower down, on the outer portion of cartilage, leaving, between the two, the little gutter directly above the lobule or fleshy part of the ear.

This fine large species, remarkable for its variously coloured fur, was first scientifically described by SAY, in the work above quoted, and we are indebted to him for all we have said relative to it. He states it to have much affinity with the New York Bat, before described, but is of twice the size, and distinguished from that species by various minor characters.

SPECIES IV.—*Arcuated Bat.*

Vespertilio Arcuatus.—SAY.

Long's Expedition to the Rocky Mountains, Vol. i. p. 168.

The head of this species is large, and the ears, rather shorter than the head, are wide, rounded at tip and hairy at base. The posterior edge has two slight and very obtuse emarginations: the anterior base is distant from the eye. The tragus is arcuated, and obtuse at tip; the interfemoral membrane is naked, including all the tail, except one half of the joint next the last. The total length of this species is five inches; the tail being one inch and a-half long. In expansion it is more than thirteen inches. The upper cutting teeth, like those of various species of our Bats, are not prominent, but much inclined forwards, not rising at their tips above the intervening callosity.

MR. SAY remarks, that "this Bat might readily be mistaken for the Carolina Bat (*V. Carolinensis*, GEOFF.) which it resembles in colour, but differs from it in being of a larger size, the ears broader and proportionally shorter, and an arcuated tragus curv-

ing in an almost uniform manner towards the anterior portion of the ear, like that of the *V. Serotinus*, DAUB. GEOFF. though not so broad."

This Bat was obtained from the same vicinity as the preceding.

SPECIES V.—*Subulate Bat.*

Vespertilio Subulatus.—SAY.

Long's Expedition to the Rocky Mountains, Vol. ii. p. 63.

The ears are longer than they are broad, and nearly as long as the head; the half nearest the head is hairy, a little ventricose on the anterior edge, and extending near to the eye. The tragus is elongated and subulate. The hair above is blackish at base, and at tip dull cinereous; the interfemoral membrane hairy at base, the hair of one colour; a few are also scattered over its surface, and along its edge, as well as that of the brachial membrane. Beneath, the hair is black, the tip yellowish white. The hind feet are rather long, a few bristles extending over the nails; only a minute portion of the tail protrudes beyond the membrane.

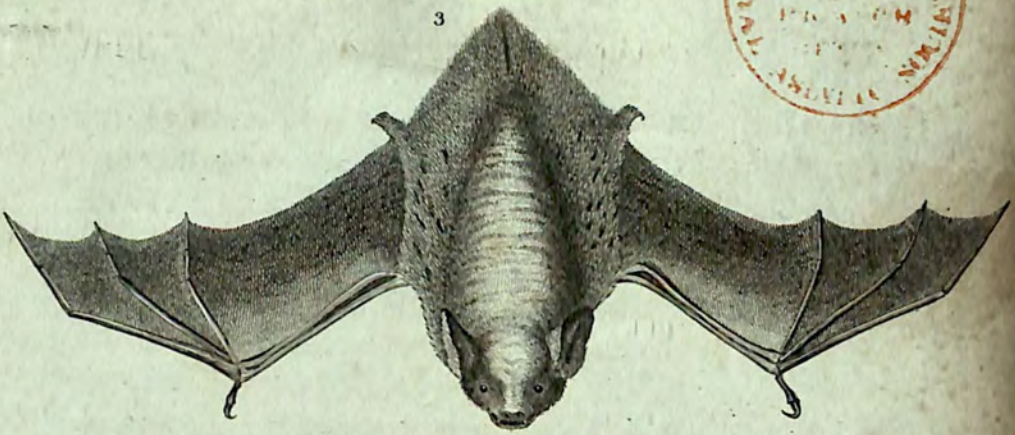
The total length of this species is two inches and nine-tenths; the tail being one inch and one-fifth long.

On this species Mr. SAY makes the following remarks, "It appears to be an immature specimen, as the molars are remarkably long and acute; the canines are very much incurved, and the right one is

singularly bifid at tip, the division resembling short bristles. This species is, beyond a doubt, distinct from the Carolina Bat, (*V. Carolinensis*, GEOFF.) with which the ears are in proportion equally elongated, and, as in that Bat, a little ventricose on the anterior edge, so as almost to extend over the eye; but the tragus is much longer, narrower, and more acute, resembling that of the *Emarginatus*, GEOFF., as well in form as in proportion to the length of the ear."*

---

* The Prince of MUSIGNANO has several new species of American Bats, the descriptions of which he at present defers publishing, in order to gain more information relative to them. Should he publish his descriptions in time, we shall insert them in our appendix.



Rider Del. F.Kearny Sc.

1.2 *New York Bat.* 3 *Hoary Bat.*

CHAPTER III.

Family II.—Insectivora; *Insect-Eaters.*

The designation by which this family is known, is not intended to imply that the animals it comprehends feed more exclusively on insects, than those treated of in the preceding chapter; but the division, by aiding the memory, serves the purpose of facilitating our studies. The members of this family resemble the cheiroptera in the form of their molar teeth and in the nature of their food, but they are destitute of every thing like the lateral membrane, which in the former supplies the place of wings.

Their chief food is insects, and most of them in cold countries pass the winter in a state of torpidity. They all have clavicles; but their limbs are short, and their motions feeble. Their paps, or teats, are mostly placed on the belly; the intestines are destitute of cæcum.* They tread on the whole sole of the foot, pass a great part of their lives beneath the surface of the earth, and most generally leave their subterranean retreats only at night.

---

* Illis invaginatus est penis.

Genus V. Shrew; *Sorex*, L.

Gr. Μυγαλη.
Ang. Sax. Screawa, Scirfemus.
Germ. Die Spitzmaus, Reutmaus. Zismaus, Müger, Mützer, Bissammaus.
Dutch. Spitzmuis.
Dan. & Norse. Spidsmuus, Nebbemuus, Angelmus, Museskiær.
Swed. Näbbemus.
French. (*Ancient*) Muserain; Muzeraigne, Muset, Musette, Sery, Sri. (*Modern*) La Musaraigne.
Ital. Toparagno.
Span. Musgaño, Musaraño Murgaño.
Port. Musaranho, Muferanho.
Polish. Keret.
Hungar. Patkaani. *Lap.* Zibak.

GENERIC CHARACTERS.

The head of the shrew is elongated, conical, and the eyes are visible, though extremely minute; the snout is long and moveable. The ears are short, rounded and broader than they are long; the body is covered with short fine hair. The fingers and toes are very small and feeble, stand separate from each other, and are provided with hooked nails, which are unfit for burrowing. The teats, from six to ten in number, are partly placed on the chest, and partly on the belly. The feet are short, having five toes with slight nails.

Dental System.

30 Teeth:
- 18 upper: 2 Incisor, 0 Canine, 16 Molar — 10 False, 8 True — Molars.
- 12 lower: 2 Incisor, 0 Canine, 10 Molar. — 4 False, 6 True — Molars.

In the upper jaw there is a very strong hooked cutting-tooth, terminating in a point, and strengthened at its base posteriorly by a strong edge, which is itself divided in two by a furrow on its internal face,

which forms another uneven edge at that part. Immediately next this, is a regular very strong false molar, which is followed by two others, both of the same size, equally regular in form, but one-half smaller than the first. The fourth false molar is rudimental, and concealed between the third and the fifth. The latter is very large, cutting, with a flat and salient part at its internal basis, which causes it to resemble the tearing grinders of the most carnivorous animals. The three following molars are similar to those thus far described, only that the base on which the prisms are placed are composed anteriorly of a pointed tubercle, and posteriorly of a smooth and flattened part: moreover, the anterior prism of the first is less developed than the other, and the posterior prism of the last is not at all perceptible.

In the lower jaw there is a strong, long and crooked cutting-tooth, terminating in a point, and reclining in front; next to this follow two regularly formed false molars, the first a little smaller than the second; the three true molars resemble those of the Shrew-mole and Star-nose, except that the last has only the anterior point of its posterior prism.

In their reciprocal position, the lower cutting-teeth correspond, by their points, with the inside of the upper ones, and fill up the furrow which separates the principal part of these teeth from that which exists at their base, posteriorly. The false molars leave a large space between them, except the two last, which touch each other, the anterior edge of the upper being applied to the posterior edge of the lower. The anterior face of the first lower molar, is opposed to the internal surface of the last upper false molar, which we have seen is small; it is be-

tween these two teeth that the cutting is performed by this system of dentition. The other teeth have the same relations as those heretofore described.

The shrews belonging to this country are remarkable for their diminutive size and apparent helplessness, and were we to judge of their utility or capacity for enjoyment by their size or strength, we should conclude that their usefulness is very equivocal, and their lives exceedingly comfortless. But their small bodies and slight strength only fit them more perfectly for the places they inhabit, and their senses being planned on a scale relative to their condition, leave us every reason to infer, that they may derive as much pleasure from their peculiar food, and the society of their mates, as the largest animals in existence, whose massive frames seem to make earth tremble beneath their footsteps.

Shrews are most generally found in the country, where their residence is either in burrows, or among heaps of stones, or in holes made by other animals; near dung heaps, hay ricks, or privies, they are more numerous than elsewhere. Insects are their principal subsistence, but they seem no less fond of grain, putrid flesh, and filth of various sorts, as they have been occasionally seen rooting in ordure in a manner similar to that of the hog.

These animals rarely come out in the day time, and are so small as to require very close attention to observe their modes of living. As the autumnal season advances, they are found resorting in considerable numbers to the barns and granaries, where they find a large supply of food and more comfortable quarters for their winter's sleep.

A very ridiculous notion formerly existed relative to the bite of these inoffensive creatures. It was thought they bit and poisoned cattle; hence we find, among other appellations, the name of "poisonous mouse" has been bestowed. This notion most probably originated in consequence of associating the existence of shrews in the vicinity of stables, with the appearance of some disease on the extremities of horses, &c. As the mouth of the shrew can scarcely be opened wide enough to grasp the doubling of skin necessary to allow of a bite, we must perceive that the accusation of poisoning is erroneous.

Cats and other animals will hunt and destroy shrews, but cannot sufficiently surmount the disgust caused by their offensive odour, to eat them. The cause of their peculiar smell, has been discovered by the celebrated GEOFFROY, who gives a description of the secretory apparatus in the Memoirs of the Museum of Natural History, vol. i, 1815.

These odoriferous glands, unlike those of various other animals, are in the shrew found on the side, nearer to the anterior than the posterior extremities, and are of an oval form. Externally, they are rendered visible by an oval-shaped disk, composed of two ranges of short, stiff hairs. The ranges in crossing each other are placed back to back, and are thus retained; they are constantly moistened by a viscous humour which is furnished by the internal organ, and gives them a greasy or oily appearance. The situation of these glands is rendered still more distinct by a circle round them, caused by the nakedness of the parts.

The results of numerous observations induced

Geoffroy to conclude, that this glandular apparatus is not in the same state of enlargement throughout every season of the year. It is more remarkable in the males than in females, and in the former it is much larger at the approach of the breeding season. From this circumstance, the French naturalist has concluded, that the only use of this gland is to furnish a guide to conduct the sexes to each other, during the season of their loves, through the long subterranean galleries they inhabit.

If we consider the long and pointed nose of the shrew, which is extended considerably beyond the jaws, we perceive a distant resemblance to the scalops or, shrew-mole, while its legs and tail give a slight resemblance to the mouse. This comparison does not, however, bear examination in reference to either animal, as will be fully seen when we come to speak of them, especially in reference to the eyes, ears and hands of the shrew-mole, and the teeth, &c. of the mouse. Nevertheless there is no other animal we can well compare it with, and the first view of one of the shrews does not fail to excite a recollection of the mouse, if not of the shrew-mole.

Species I.—*Small Shrew.*

Sorex Parvus.—Say.

Long's Expedition to the Rocky Mountains, vol. i. p. 163.

The small shrew is of a brownish ash colour on the body above, and cinereous beneath. Its head is elongated, having the eyes and ears concealed; the whiskers are long, the longest reaching nearly to the

back of the head. The nose is naked and emarginated: the front teeth are black, and the lateral ones piceous. The feet are whitish and five toed; the nails prominent, acute, and white; the tail is short, subcylindric, moderately thick, slightly thicker in the middle, and whitish beneath.

The length from the tip of the nose to the root of the tail is two inches and three-eighths. The tail measures three-fourths of an inch. The length from the upper teeth to the tip of the nose is three-twentieths of an inch.

This species was obtained at Engineer Cantonment, on the Missouri, where it was caught in a pitfall set for a wolf by Mr. TITIAN PEALE. It may properly be considered as one of the smallest mammiferous animals belonging to this continent.

SPECIES II.—*Short-tail Shrew.*

Sorex Brevicaudus.—SAY.

Long's Expedition to the Rocky Mountains, vol. i. p. 164.

The body of the small shrew, when seen from before, is of a blackish lead colour above; when viewed from behind, it is of a silvery plumbeous hue; the fur, which is dense and rather long, is of a paler colour beneath. The head is large, the eyes very minute; the ears are white, entirely concealed beneath the fur. The passage to the internal ear is very large, with two distinct half divisions (tragus and antitragus?) which are at tip sparsely hairy. The mouth is short with a slightly impressed abbreviated

line above. The nose is of a livid brown colour, and emarginated: the mouth is margined with whitish and with scattered short hairs; the teeth are of a pitchy black at tip. The feet are white, the second, third, and fourth toes being subequal; the first and fifth are shorter, the former rather shortest, the anterior having but few hairs and nearly naked.

The nails are nearly as long as the toes; the tail is covered with scattered hairs; it is of nearly an equal diameter, but slightly thickest in the middle, depressed, and nearly as long as the posterior feet.

The total length of this shrew is four inches and five-eighths; length of the tail one inch; from the upper teeth to the tip of the nose one-eighth.

This species bears a close resemblance to the one first described, but it is proportionally much larger: the head is much larger and more elongated, the tail is more robust, and the inferior anterior pair of incissors are similar to those of the Sorex Constrictus of GEOFFROY. Mr. Say inclines to the opinion that this is the same species as that mentioned by Barton as "the black shrew."

SPECIES III.—[*marked thus* *, *in the plate.*]

The description of this species is postponed for the present, as Mr. TITIAN PEALE, to whom it belongs, has not yet decided on its name. It has, however, been described by a recent writer, as the *Sorex Araneus* of Europe, with the description of which it by no means agrees. We hope to give the proper designation and description in our appendix.

1 *Short Tail Shrew.* 2 *Small Shrew.* 3 *Shrew Mole.*

CHAPTER IV.

Genus VI. Shrew-Mole; *Scalops*, Cuv.

Fr. Musaraigne Taupe.
Ital. Scalopo.
Germ. Wassermaus.
Eng. Brown Mole.

GENERIC CHARACTERS.

The head is elongated, and terminates in an extended and cartilaginous snout, which is very flexible. The eyes are exceedingly small and entirely concealed by the hair, requiring the closest attention for their detection. Not only is the auricle or external cartilaginous part of the ear entirely wanting, but the integument of the head nearly covers over the cartilaginous tube leading to the internal ear, and its situation is only known by a small naked spot, in which there is a minute opening.

The feet are very short and five toed; the anterior terminate in a remarkably large hand, having the fingers joined together by the integuments up to the last phalanx. These fingers are armed with long, flat and linear nails, increasing in length from the thumb to the third finger; the two others are less in size, and the external is smallest of all. The extra-

ordinary breadth of the hand is produced, as we shall hereafter see, by a singular supplementary bone, &c. The hind feet are very delicate, and the toes are provided with small hooked nails.

Dental System.

36 Teeth:

- 20 Upper
  - 2 Incisive
  - 0 Canine
  - 18 Molar.
    - 12 False
    - 6 True
    - } Molars.
- 16 Lower
  - 4 Incisive
  - 0 Canine
  - 12 Molar.
    - 6 False
    - 6 True
    - } Molars.

In the upper jaw we find an incisor with a rounded, cutting edge, its front surface being also rounded, and its posterior one very flat. There is much analogy between the incisors of this animal and those of the *gnawers*, more especially as they stand side by side on the same line. Behind these teeth come six false molars; next to these, two small ones resembling threads, such is their tenuity; afterwards there is another much larger, cylindrical and pointed, and after that a fourth, equally cylindrical and pointed, but much smaller. The fifth is obliquely truncated at its summit, from before backwards, the section resembling the head of a lance, the point being bent backwards; the sixth is entirely similar to the preceding, except that it is twice the size. The three molars are, in general, similar to those of the bat; the only difference is, that the anterior prism of the first molar is imperfect, its anterior half not being developed, and the same is the case with the posterior prism of the last one, by the ob-

literation of the posterior half of this prism. Finally, the interior projection of each of these three teeth is simple, and consists of nothing but a tubercle at the base of the anterior prism.

In the lower jaw there are two incisors; the first is very small and cutting, the second pointed, and slightly hooked, leaning forward, and destitute of roots, properly speaking, like the tusks of certain animals, in which the dental capsule remains always free: we call them incisors, only because they act in mastication against the upper incisors. The three succeeding false molars have a single point, with a small notching posteriorly, slightly inclined forwards, and resembling each other, except in size, the first being the smallest and the third the largest. The three molars are exactly similar to those of the bat, that is to say, composed of two parallel prisms, terminated each by three points, and presenting one of their angles on the outer side, and one of their faces on the internal surface. The two first are of the same size; the last somewhat smaller.

In their reciprocal position, the lower incisors correspond to the internal face of the upper; the false molars are alternate, and the molars are so related, that the anterior prisms of the lower, fill the hollow found between two teeth, and the posterior prism that which exists between the two prisms of a single upper tooth. The lower are the thickness of one prism in advance of the upper molars.

Species I.—*Shrew-Mole.*

Scalops Canadensis.—Cuv.

Sorex Aquaticus, *Lin. Syst. Nat. Vol. i. p.* 112, *Sp.* 3.
Musaraigne brune, *Enc. plate* 30, *fig.* 2.
Talpa Fusca, *Penn. Quad. p.* 314.
Scalops Canadensis, *Desm. Mam. p.* 155.

The Shrew-Mole when at rest bears more resemblance to a small stuffed sack than to a living animal, its head being entirely destitute of external ears, and elongated nearly to a point, and its eyes so extremely small and completely hidden by the fur, that it would not be surprising should a casual observer conclude this creature to be blind. But we must be continually guarded against hasty conclusions, or idle conjectures, drawn from slight observations; this apparently shapeless mass is endowed with great activity and a surprising degree of strength, and is excellently suited for deriving enjoyment from the peculiar life it is designed to lead.

The shrew-mole is found abundantly in North America, from Canada to Virginia; often living at no great distance from water-courses, or in dykes thrown up to protect meadows from inundation. But so far from exclusively inhabiting such places, as stated in various books, I have found them in far greater numbers at a very considerable distance from any water-course, and in high oftener than low grounds. In the country they frequent the gardens, where their subterranean galleries are sometimes productive of vexation to the farmer, especially as

the animal occasionally courses along the rows of pea-vines, &c. apparently for the purpose of feeding on their roots. This, we shall hereafter learn, is most probably an error, and we may find good reasons for believing that the shrew-mole should be considered rather as a benefactor than a depredator.

The shrew-mole burrows with great quickness, and travels under ground with much celerity; nothing can be better constructed for this purpose than its broad and strong hands, or fore paws, armed with long and powerful claws, which are very sharp at their extremities, and slightly curved on the inside. These are thrust forward so as to be even with the extremity of the flexible snout, and the earth to be removed is pressed outwards, and at the same time thrown backwards with remarkable quickness. The soft and polished fur with which this animal is covered, preventing a great degree of friction, tends to facilitate its subterranean march.

Numerous galleries, communicating with each other, enable the shrew-mole to travel in various directions, without coming to the surface, which they appear to do very rarely, unless their progress is impeded by a piece of ground so hard as to defy their strength and perseverance. The depth of their burrows depends very materially on the character of the soil, and the situation of the place: sometimes we find them running for a great distance, at a depth of from one to three inches, and again we trace them much deeper; after following such a gallery for several yards, it occasionally communicates with another going deep into the earth.

The most remarkable circumstance connected with these burrows, is the number of hills of loose dirt which are frequently formed over the surface of them. These hills of loose earth are usually found in considerable numbers, at a distance of two feet or a little more apart, being from four to six inches high, and about the same in diameter. I have often examined these eminences, in the neighbourhood of Philadelphia, and have never been able fully to understand how they are formed; a slight motion is observed at the surface, and presently this loose earth is seen to be worked up through a small orifice, whence, falling on all sides, by its accumulation the hills just mentioned are produced. It seems to be brought from some distance, for on breaking up the gallery, it was evident that more earth had been thrown out than could have been removed in excavating the immediately adjoining portions of the burrow. In one instance I have seen the shrew-mole show the extremity of its snout from the centre of one of these loose hills, where it had come at mid-day, as if for the purpose of enjoying the sunshine, without exposing its body to the full influence of the external air.

Under ordinary circumstances the burrows are simply oval arched galleries, running forward either straight or in gentle curvatures, at the depth heretofore mentioned, and they are most regular in soils abounding in earth-worms. In the dry and sandy soil of Jersey, I have found them very irregular in direction and depth, and in the woods, uniformly leading round the roots of trees, under which

large excavations are frequently to be traced. We can readily understand the object of these excavations when we recollect that the ants very often have their nests in such situations, and their larvæ, or eggs, constitute a favourite food of the shrew-mole. The burrows made by this animal are sometimes found to terminate under large stones, where it resorts to gather the insects which are numerous in such situations. I have traced a burrow of this sort close to a barn-wall, and then following it nearly around the whole house, have found that it passed under every large stone in its vicinity, although not directly in the general course of the gallery, the cavity being much larger beneath the stones than elsewhere.

The favourite food of the shrew-mole is the earth-worm; grubs and insects of various kinds he destroys in great quantities, and it may fairly be questioned whether the good done in this way does not more than overbalance any evil attendant on his presence. It is true that this animal is accused of eating grass roots, and roots of succulent vegetables, and may thus be productive of some mischief in gardens, but scarcely to so great a degree as to constitute a serious evil. The presence of the shrew-mole in fields of Indian corn appears to be decidedly advantageous from the destruction of great numbers of slugs and worms; but in dry seasons these animals, if numerous, may injure small grain or grasses to a considerable extent, not only by the wounds they inflict on the root with their sharp claws, but by raising the sod while forming their burrows, so as to withdraw the roots from the influence of the moist soil below.

It is remarkable how unwilling they are to re-

linquish a long frequented burrow; I have frequently broken down or torn off the surface of the same burrow for several days in succession, but would always find it repaired at the next visit. This was especially the case with one individual whose nest I discovered, which was always repaired within a short time, as often as destroyed. It was an oval cavity, about six or seven inches in length by three in breadth, and was placed at about eight inches from the surface in a stiff clay. The entrance to it sloped obliquely downwards from the common gallery, about two inches from the surface; three times I entirely exposed this cell by cutting out the whole superincumbent clay with a knife, and three times a similar one was made a little beyond the situation of the former, the excavation having been continued from its back part. I paid a visit to the same spot two months after capturing its occupant, and breaking up the nest, all the injuries were found to be repaired, and another excavated within a few inches of the old one. Most probably numerous individuals, composing a whole family, reside together in these extensive galleries. In the winter they burrow closer to the streams, where the ground is not so deeply frozen.

The shrew-mole is not only able to make his way rapidly under ground, but can run quite fast when on the surface, notwithstanding the apparent disadvantages under which he labours. When placed on a smooth path-way, or a floor, and especially if alarmed, he runs with far more speed than could possibly be anticipated from the structure of his limbs. In attempting to escape by running his motions are very

similar to those performed while burrowing; the broad fore paws are placed on edge, with the thumb to the ground, and both fore and hind feet are moved in rapid succession, the body being trailed along with a slight undulatory motion.

The strength of the shrew-mole is really surprising, and altogether beyond what we should deem possible in so small a creature. One which we had in a basket on the mantlepiece of a parlour, made its escape, and fell to the hearth; apparently it sustained little injury by the fall, but hurried on until it reached the wall, where it began to travel round the room. Whenever its course was impeded by the feet of the chairs, which were of large size, it would not go round them, but wedging itself between them and the wall, pushed them with apparent ease far enough to obtain a free passage, and it thus continued to move several in succession. What was more astonishing, it passed in a similar manner behind the legs of a small mahogany breakfast-table, and pushed it aside in the same way it had done the chairs, finally hiding itself behind a pile of quarto volumes, more than two feet high, which it also moved out from the wall.

When endeavouring to escape a pursuer, while in his burrow, the shrew-mole displays his utmost strength. In this case, although you may have succeeded in catching him by his posterior extremities, it is exceedingly difficult to draw him from the hole without violence. His broad and strong fore paws are then struck outwards against the sides of the excavation, with all the energy of despair, and when

the animal is finally dragged from his retreat, he frequently inflicts a severe bite on his disturber.

Shrew-moles are most active early in the morning, at mid-day, and in the evening; after rains they are particularly busy in repairing their damaged galleries; and in long continued wet weather we find that they seek the high grounds for security. The precision with which they daily come to the surface at twelve o'clock is very remarkable, and is well known in the country. In many instances when we have watched them, they appeared exactly at twelve, and at this time only have we succeeded in taking them alive, which is easily done by intercepting their progress with a spade, broad knife-blade, &c. and throwing them on the surface. These animals do not appear to be well suited for living in the open air, especially if it be somewhat cool: for, after being a few minutes exposed, we have always observed them shiver as if from the change of temperature.

That an animal of this kind should be domesticated with facility would seem hardly possible, yet our friend TITIAN PEALE tamed a very fine one, which he caught while we were together examining their modes of burrowing. This shrew-mole is kept in a box containing some loose earth and dried grass for his bed; he eats considerable quantities of fresh meat, either cooked or raw, drinks freely, and is remarkably lively and playful, following the hand of his feeder by the scent,—burrowing for a short distance in the loose earth, and after making a small circle, returning for more food. When engaged in eating he employs his

flexible snout in a singular manner to thrust the food into his mouth, doubling it under so as to force it directly backwards. When he has obtained one piece of meat, he will not relinquish it even for the sake of earth-worms, or other favourite food; he is also fond of burying himself when he has received any thing, in order to eat it undisturbed.

The shrew-mole is covered with a soft, glossy fur, which is about half an inch in length, and of a uniform colour over the whole of the body. This general tint is bright plumbeous, having silvery reflexions when viewed from the front of the animal, and appearing of a darker hue when seen from the posterior part, with faint purple reflexions, varying according to the incidence of light. The fur is very closely set, and the direction of it is in all parts from before backwards. The only places where any differences of colour are distinguishable, is around the base of the snout, where it is faintly ferruginous, and this ferruginous tint may be traced for a short distance on the base of the fur towards the situation of the ear, which, though destitute of external appendages, may be discovered on the lateral part of the head, by carefully turning away the surrounding fur. Immediately posterior to the chin, or in the fold of the neck, there is a narrow but well marked ferruginous horizontal streak for about half an inch, and a faint trace of the same colour may be distinguished along the centre of the belly.

The whole fore-arm of the shrew-mole is concealed by the skin, so as to give no external mark of its figure, leaving the broadly expanded palm, with its

long nails, resting on its internal or inferior edge, projecting from the fore part of the body in an awkward manner, if it be compared with the anterior extremity of other animals. All the joints of the fingers are moveable, and the carpus is articulated with the fore-arm, so as to be flexed with much force by a strong muscle, whose tendon is broadly expanded to be inserted into the extremities of the phalanges. The nails of the hands are strong, nearly straight, and edged at their extremities, being convex externally, and rather flattened on the posterior or inner side. In addition to the bones of the hand, which the shrew-mole has in common with various animals, it is provided with an additional bone on the radial edge of the hand, or exterior to the thumb, articulated with the wrist, and of a semicircular, or rather scythe-like figure. There is also a rudiment, somewhat similar in character, exterior to the little finger. To the larger one first mentioned, a small tendon from the muscles is attached, and this bone, although entirely covered by the skin of the palm, appears to serve the purpose of very much increasing its breadth, and adding to the usefulness of the hand as an instrument for burrowing. An extension of the skin of the palm on the outside or under edge of this bone, so as to form a small fold, still farther increases the breadth of the hand. The palms of the hands are seven-eighths of an inch in breadth, and of a light flesh-colour when the animal is first caught.

The soles of the hind feet are placed on the earth, as in other insectivorous animals; the toes are deli-

cate, and the joints moveable, having small curved claws: from the heel to the base of the claws, the distance is five-eighths of an inch.

The snout is composed of a cartilage articulated with the premaxillary bones, and moved in various directions by muscles situated on the side of the head; it is naked, and of a very light flesh-colour when the animal is first exposed to the open air; it is half an inch long, and feels somewhat horny at the extremity. The under surface is at the end slightly prolonged, or projects a little beyond the nostrils, which open on its upper surface, and are rather oblong. The mouth of the shrew-mole is comparatively large, and the tongue is considerable in size. The roof of the mouth is marked by nine transverse projections, or ridges and hollows, which are beautifully distinct. The eyes of this creature are exceedingly small, and very difficult to be discovered externally without a good glass. They are entirely concealed by the surrounding hair, which being cleared away, leaves a naked space equal in circumference to the head of a middling sized pin; in the centre of this space a small dark speck may be distinguished with the naked eye. On examining one adult individual with a microscope, (No. 9,) this proved to be a number of hairs arranged in a semi-elliptical manner, the eye-ball being scarcely discoverable. When the skin was carefully removed, the eye-balls were found corresponding to the situation of these hairs, and were less in size than a grain of mustard-seed. On holding the skin up to the light, and examining it attentively, the exceedingly small aperture, or separation of the eye-lids, was visi-

ble; it would allow the passage of an ordinary sized human hair, and possibly of a very fine horse hair. Hence we perceive that the vision of this animal must be extremely limited, as the focus of so microscopic an eye is almost inconceivably small. It seems to be barely sufficient to give the shrew-mole an intimation of light, without allowing it to distinguish the figures of bodies; this conclusion is further supported by the careful manner in which the eye is concealed by the fur, and the minute aperture through the lids, or the skin. The orifice leading to the internal ear is curiously situated, being placed about three-fourths of an inch behind the eye, and opening nearly over the shoulder-joint of the animal. In the specimen first examined, this opening was so small that it was not detected, and I thought the skin continuous over the cartilaginous tube, but a recent search enabled me to ascertain its position. The aperture is nearly circular, and would admit an ordinary pin; the cartilaginous tube, leading to the internal ear, from immediately within the skin, where it is expanded somewhat trumpet-form, to its entrance into the skull, is five-sixteenths of an inch long.

When the skin of the animal is removed, a much better idea of its peculiar adaptation to its mode of life is obtained. The muscles surrounding the shoulder-blade, arms, and fore-arm, are of great size, and occupy all the space anterior to the greater convexity of the chest, so as to destroy all appearance of neck, giving to the fore part of the body a robust and clumsy appearance. The head is, however, capable of some motion, both laterally and vertically. All the appearances of strength seem con-

centrated about the fore shoulders, where the muscles swell out with strong fibres, and of a deep red colour. The posterior extremities are delicate and slender when compared with the anterior, the thighs being flattened and thin, as if of less importance to the motion of the animal.

Every circumstance seems to be studied in the shrew-mole with a view to facilitate its progression under the surface of the earth. We observe this attention not only in its silky and polished fur, its pointed head, broad and powerful hands, and muscular limbs, but all its internal structure seems equally to co-operate. The pelvis is a single, slight and flattened bone; the pubic portions, instead of uniting in the centre, and projecting as in other animals, are very small, rise but slightly, and do not unite with each other; but from their extremities the crura penis, with the erector muscles, take their origin. The penis itself, after passing forwards for half an inch, as it approaches the surface is curved backwards, that it may present no resistance to the motion of the body through the ground. Neither do the testes present externally; a small portion, about the size of a large pin's head, is exterior to the abdominal ring, and this part corresponds very closely with the head of the epididymis in the human subject, but the body of the testis is within the cavity of the abdomen, being half an inch long, and one-fourth of an inch broad. Near the anus, and situated between the upper part of the thigh and tail, we find on each side an odoriferous gland, which is about half an inch long, of a dark greenish tint, and having a strong

musky odour, which imparts to the animal, during life, a very peculiar smell.

The total length of the shrew-mole, from the point of the snout to the beginning of the tail, is five inches, and the tail one inch long. The longest fur on the body was half an inch in length. The specimen from which this description is made was a fine adult male, which, with the assistance of my friend W. W. Wood, was caught on the banks of the Delaware, and kept alive for some time. We have since had an opportunity of examining several specimens, and find no difference between them in colour, except that the ferruginous marking on the head and neck does not appear to be a constant character. A living specimen, kept for many weeks in a room, was nearly as tame as the one already mentioned; this individual spent the greater part of the day asleep, and was very active at night. He could not see in any light, as he uniformly ran his nose with some violence against every obstacle several times, before he learned to avoid those that were permanent.

We have, at the suggestion of a scientific friend, applied to this animal the name of *Shrew-mole*, which is a translation of the French designation, rather than run a risk of having it confounded with the European genus Talpa, by calling it simply "*the mole*," a name by which it is popularly known.

CHAPTER V.

Genus VII. Condylura; *Illiger*.

Fr.—La Taupe du Canada. *Germ.*—Die Haarnase Spitzmause.

GENERIC CHARACTERS.

The head is long, conical, terminating in a snout, which is encircled by a cartilaginous fringe or stellated disk, having about twenty points. There are no external ears; (but a large meatus externus, or auricular orifice, with a division analogous to a tragus and antitragus, leads to the internal ear;) the eyes are very small, and concealed by fur. The anterior extremities are very short; the paws, or fore-feet, are broad, five-toed, (the toes being united by the integuments as far as the second phalanx,) covered by corneous scales, and terminated by long, straight, and robust nails. The posterior extremities are one-third longer than the anterior, having five slender toes, (the phalanges of which are not kept together by the integuments,) provided with small hooked nails. The body is thick, covered with fine, short, soft fur, arranged perpendicular to the length of the body: the tail has sixteen joints or vertebræ; it is compressed near the body, then swells slightly, and tapers thence to its extremity, showing no inequalities caused by the vertebræ.

Dental System.

40 Teeth:
- 20 Upper: 6 Incisor, 6 Conical, 8 Molar. (which may be considered as canine, or false molar teeth.)
- 20 Lower: 4 Incisor, 10 Conical, (as above) 6 Molar.

In the upper jaw there are six anomalous cutting teeth, situated in the premaxillary bones; the two intermediate are very large, contiguous, and ranged along the whole border of the jaw, hollowed in the form of a spoon, having a slightly oblique cutting edge, and the angle by which they touch more salient externally than internally. The next cutting-tooth on each side touches the intermediary, and resembles a very long canine tooth, being conical and slightly triangular at its base, where it has two very small tubercles, the one before and the other behind. The external or lateral incisor, the smallest of all the teeth in this jaw, is simply conic, a little compressed, slightly curved forwards at its point, and placed at some distance from the incisor, in the manner of a canine tooth. There are seven molars on the right and left, the three first of which are smaller than the posterior, separated from each other, all three moderately large, and furnished with a small pointed lobe at the front of their base, and another behind. The four last molars are larger than the anterior ones, and each of them composed of two folds of enamel, forming two acute tubercles on the inner side, and obliquely hollowed to a gutter on the outside: there is a projection hollowed to a cupola at

the internal bases of these teeth. The most anterior of these four last molars, and the smallest, are placed on a level with the commissure of the lips; the following one is higher, the third still more so, and the last smaller than the third.

In the lower jaw, which is very delicate, there are four flattened cutting teeth, reclined in the form of a spoon or ear-pick, the lateral ones in part horizontally inclined on the intermediary, and rising slightly at their external edge. Five teeth, with many lobes, then follow on each side, and may be considered as false molars, as much separated from each other as those of the upper jaw, the first being much larger than the others, and in this alone resembling a canine, having three lobes, the principal of which is intermediate, the second very much effaced, and the third slightly salient. The second is nearly similar, but shorter and more compressed, having the posterior lobe more apparent than in the preceding. The third has four lobes, the anterior of which is the least, the second the largest and most apparent of all, and two small posterior ones; the fourth is nearly similar to the third, with this difference, that the first posterior lobe is more internal, and this tooth consequently thicker: the fifth only differs from the fourth by its greater width, and is almost equal to the first true molar. There are only three molars in this jaw, presenting, like those of the upper jaw, two folds of enamel, forming a point; but these folds are inverted, the points being external instead of internal; the grooves, on the contrary, are internal, and the lower part of the tooth, instead of exhibiting the whole

projection, presents a perpendicular wall, and has two depressions at its summit, each of these depressions corresponding to the groove that descends from one of the two points.*

Species I.—*Star-nose Mole.*

Condylura Cristata; Illiger.

Taupe du Canada; Delafaille, Ess. sur L'hist. Nat. de la Taupe, fig. 1769.
Sorex Cristatus; Linn. Erx.
Radiated Mole; Penn. Syn. Quad.
Condylure a Museau Etoilé; Desm. Mam. p. 157.

The Star-nose mole frequents the banks of rivulets, and the soft soil of adjacent meadows, where their burrows are most numerous, and apparently interminable; in many places it is scarcely possible to advance a step without breaking down their galleries, by which the surface is thrown into ridges, and the surface of the green sward in no slight degree disfigured. The excavations which are most continuous, and appear to be most frequented, are placed at a short distance below the grass roots, on the banks of small streams; these are to be traced along their margins, following every inflexion, and making frequent circuits in order to pass large stones or roots of trees, to regain their usual proximity to the surface nearest the water.

---

* This dental system is from Desmarest. See his excellent note on the genus Condylura, in the Journal de Physique for September, 1819.

Rider. Del.

F. Kearny. Sc.

The Star-nose Mole

* End of the Nose magnified.

The form of the burrow does not perceptibly differ from that made by the shrew-mole; but very few hills are to be found in the localities inhabited by the star-nose. The chamber-cell resembles that described in the last chapter, being a space of several inches dug out of some spot where the clay is tenacious, and the cell least exposed to injury from the weather or other accidents.

The system of dentition peculiar to this genus, would lead to the inference that the quality of its food must in some respects differ from that used by the shrew-mole; but on this point it is not easy to say more, than that as the star-nose prefers moist and low situations, and the shrew-mole is most frequently found in dry and rather elevated spots, they feed on the larvæ and insects proper to such places, which are doubtless of dissimilar kinds. In a state of captivity both animals feed readily on flesh, either raw or cooked, and neither seem to show any fondness for, or willingness to eat, vegetable matter.

The star-nose mole is about four inches in length, and of a blackish-gray colour; its pelage being short and very fine. Its head is much elongated, and the snout is distinguished by a remarkable disk, or naked cartilaginous fringe, which surrounds the nostrils. This disk has about twenty points or rays, the two superior and the four inferior intermediate of which are united at their bases, and are situated on a plane slightly in advance of the others: the surface of these fringes is granulated, and somewhat of a rose colour. The neck is not distinguishable in consequence of the position and great size of the muscles that are destined to move the anterior extremities, which are

38895

very short, broad, covered with scales, and provided with large straight nails, the shortest of which is on the finger corresponding to the thumb; the second, third, and fourth are successively and proportionally longer than each other: the nail on the superior or little finger is exactly of the same size as that of the second or index finger: all the fingers are united as far as the second phalanx. The hind feet are a third longer than the fore ones, being slender, delicate, and weak; the phalanges are separated from each other throughout, and have small, curved, and sharp nails.

The situation of the eyes is marked by three or four equal hairs, which may be readily discovered, and are not so stiff or large as those of the whiskers, the direction of which is not horizontal and lateral, like most other mammiferous animals, but raised nearly parallel, and turned towards the snout. Seven transverse wrinkles occupy the space in the palate between the cutting teeth and the first three molars.

There are several very interesting external characters peculiar to the star-nose, which have been much overlooked by those who have hitherto written on this subject; we will introduce them in this place, as they may be serviceable in enabling us to compare the present genus with some others.

The star-nose is destitute of an auricle projecting above the level of the skin, but, nevertheless, has a large auricular orifice. This meatus externus is half an inch long, having a distinctly marked tragus and anti-tragus, and is situated at a short distance from the shoulder, in the broad triangular fold

of integument connecting the fore-arm and head. From the meatus, the course of the cartilaginous tube is obliquely downwards, forwards, and inwards, until it terminates in a delicate bony tube, previous to reaching the tympanum, which is large and composed of a very delicate membrane.

The scales on the anterior and posterior extremities have been mentioned in general terms by several writers, especially by DESMAREST, who gave the first correct description of this animal. But these scales are so peculiar and uniform in their position, that a naturalist should not pass over the particulars of their arrangement in silence.

On the anterior extremities, the superior or ulnar edge of the hand has on its anterior surface, (regarding the position of the animal) a row of corneous scales, about nine in number, which are broadest midway from the carpus to the first phalanx of the fifth finger. Another row of scales commences on the inferior part of the little finger, becoming broader and of a semilunar figure as they extend towards the metacarpus; between these two a much smaller row is placed. The fourth finger has a single row of small scales on its upper posterior side, and a large one extending along the back of the finger to the metacarpus; the middle finger has a small central row, which is just distinguishable; that on the fore finger is still more faint; the thumb has none but very small ones on its central posterior part, but on its inferior posterior part, or radial edge, it has one scale of considerable size on the phalanx, and four or five between this part and the carpus; the two nearest the scale on the phalanx are largest.

The surface of the palm of the hand is covered with small circular scales, extending most numerously, and of a darker colour, from opposite the root of the thumb, obliquely outward to the basis of the little finger.

On the inferior extremities, the whole of the superior surface of the foot is covered with minute, blackish, circular scales, which increase slightly in size as they approach the toes. On the anterior part of the fourth toe is a large central row of black scales, and on the fifth a rather smaller one; hence these toes have a very considerable resemblance to the toes of a bird. The other toes of the hind foot being applied with their anterior surfaces to the ground, have the scales very minute and almost colourless.

The colour of the scales varies on different parts of the hand. On so much of the back of the hand as is formed by the fourth and little fingers, the scales are a very dark blue, approaching to black, in the living animal; hence to the large scales of the thumb the colour changes to a faint purplish blue, which is little more than distinguishable.

Two other excellent characters belonging to the palm of the hand have been neglected; the first is the enlargement of the carpal edge of the palm by an elongation of the integuments; this, in addition to the row of bristles that margins all the rest of the palm, has two distinct bristly hairs at its superior and inferior edge, more than one-eighth of an inch long. The second character is still more striking; it is a process of the palmar cuticle on the superior edge of the thumb and three succeeding fingers.

These processes are separated and directed obliquely upwards and outwards; the serrations on the thumb being two, and on the three succeeding fingers three in number.

On the soles of the (posterior) feet another character is found, which consists of five circular, distinct spots, so arranged that the two nearest the body are parallel with each other, opposite the commencement of the first toe, counting, as in the human subject, from the one nearest the median line of the body; the superior spot is nearly in a line with the fourth toe, and larger and darker coloured than the inferior; the two succeeding spots (nearer the extremity of the toes) are also parallel with each other; the exterior one is the largest of all these plantar scales, and placed nearly over the extremity of the metatarsal of the fourth toe; the fifth, or single scale, is placed in advance of all the rest, and is situated immediately over the centre, and behind the separation of the third and fourth toes. A very analogous arrangement may be observed in the soles of the feet of the *Sigmodon Hispidum;* ORD.

By comparing the condylura with the scalops, we are led to several interesting observations. We have seen that the condylura has a remarkable and large external ear, though it is destitute of a projecting auricle. The scalops has no auricle, and but an extremely small meatus externus opening on the side of the head near the shoulder.

The hand of the scalops is peculiar for its great breadth and strength: the extraordinary breadth is produced by an additional metacarpal bone, inferior or external to the thumb, articulated with the car-

pus, and having a tendon for moving it from the common flexor of the fingers.* On the superior or ulnar edge of the hand, there is a cartilaginous additament, connected with the little finger by a tendon. The condylura has the additional metacarpal bone, but rather like a rudiment, and has not the cartilaginous additament at the superior edge of the hand; hence the very great difference in breadth in the hands of the two genera. The scalops has a slight process or elongation, not at the carpal extremity of the palm, but on the inferior or outer edge of the supplementary bone.

---

* This structure resembles that of the *Talpa Europea*, or common mole of Europe, which has recently been asserted to inhabit Pennsylvania, on the authority of the MS. notes of the justly celebrated William Bartram. These notes having been made long before the genera Scalops and Condylura were established, can have no weight, unless along with the name *Talpa Americana*, Bartram had given such a description as to convince us that it was not the *scalops* he observed, of which we have little doubt. However this may be, we shall continue to discredit the existence of Talpa Europea in this country, until more positive testimony is adduced.

CHAPTER VI.

Family III.—Carnivora; *Flesh-Eaters.*

The animals belonging to this family are certainly not the only ones which feed on flesh, since all others provided with claws, and the three sorts of teeth, in different degrees feed on animal matter. The creatures now about to become the subject of our attention, are fairly and fully entitled to the appellation of carnivorous, as nature has endowed them with sanguinary appetites and ferocious dispositions, and supplied the strength and weapons necessary to their gratification.

They have four large and long canine teeth, which are separated in each jaw by six incisors, the second of which, in the lower jaw, is always more deeply set than the others. The jaw-teeth are uniformly either entirely trenchant, or partly supplied with blunt tubercles, and never with conical points. The anterior molars of these animals are the most trenchant; to these succeed a larger molar, which commonly has an additional tuberculous point, varying in size; and behind this tooth we find one or two small entirely flat teeth. These small teeth at the back of the mouth, enable dogs to chew the grass which they occasionally eat. To these three sorts of teeth the following names have been appropriated by Frederic Cuvier: the large molar in the upper and lower jaw

he calls *carnivorous;* the anterior pointed jaw-teeth, *false molars,* and the posterior blunt ones, *tuberculous.* We may readily and correctly decide on the degree of exclusiveness with which the animals of this family feed on flesh, by observing the proportion between the trenchant and tuberculous surfaces of their teeth.

Many genera comprised in this family apply the whole sole of the foot to the ground while walking or standing erect, as may be perceived by the nakedness of the inferior surface of the hind feet. A much larger number walk on the tips of the toes; hence their speed is much greater, and their general habits are also very different. All of them are equally destitute of clavicles, having in its stead nothing but a bony rudiment.

Tribe I.—Plantigrada: *Plantigrade Animals.**

The individuals of this tribe have five toes on the fore and hind feet, and in walking they place the whole sole of the foot on the ground, which enables them to walk or stand erect better than any other beasts of prey. They are destitute of a cæcum; and partake of the sluggish gait and nocturnal habits of the insect-eaters. The greater part of those found in cold countries pass the winter in a state of torpidity.

---

* Treading on the whole sole of the foot.

CHAPTER VII.

Genus VIII. *Ursus*, L; Bear.

Gr. Αρκτος		*Germ.* Der Bär.	
Ital. Orso.		*Sp.* Oso.	
Swed. Björn.		*Fr.* L'ours.	

GENERIC CHARACTERS.

The head is large, the muzzle varying in length, and terminating in a moveable cartilage. The eyes and ears are small, and the tongue smooth. The body and limbs are large, powerful, and covered with a thick woolly hair. The teats are six in number; four of them are placed on the chest, and two on the belly. The nails are incurved, very large and strong; the soles of the hind-feet are callous, and the tail is short.

The Bear is an animal of great strength and ferocity of disposition; slow in his movements, and of sluggish habits. His teeth being most fitted for subsisting on fruits and vegetable matters, he does not frequently attack other animals, unless impelled by necessity. During winter bears generally pass a great portion of time in a state of inaction and torpidity. They are most generally found in the remote and mountainous districts of North America, and are gradually becoming more scarce as population increases. As we shall give a full account of

the species, we refer the reader to what is there said for a better understanding of the character and habits of this genus.

Dental System.

42 Teeth:

- 20 Upper
  - 6 Incisor
  - 2 Canine
  - 12 Molar.
    - 6 False Molars
    - 2 Carnivorous
    - 4 Tuberculous.
- 22 Lower
  - 6 Incisor
  - 2 Canine
  - 14 Molar.
    - 8 False Molars
    - 2 Carnivorous
    - 4 Tuberculous.

In the upper jaw the two first incisors resemble those of the dog, but the middle lobe almost entirely effaces the lateral, both being very small. Internally they are divided into two parts by a transverse depression, and the internal, much less salient than the opposite part, is itself divided into two lobes by a depression which is perpendicular to the transverse furrow. The third incisor is divided into two parts by an oblique furrow, and its hooked form gives it some relation to the canine.

The canine comes next, after a small unoccupied interval; it is conical, slightly hooked, and has longitudinally from before backwards a cutting edge. Immediately at the base of the canine is a rudimental false molar; then at a short distance we find a second, which sometimes falls out with age; and after another gap there is a third at the base of the carnivorous, very slightly developed, but sometimes provided with two roots. The carnivorous is reduced to its smallest dimensions; exteriorly we may recognize the middle tubercle, proper to this species of tooth, and the posterior tubercle, but the anterior lobe is

almost effaced; at its internal side we find posteriorly a tubercle much smaller than the preceding, which increases its thickness. This particular position of the internal tubercle, which we always find at the anterior part of the upper carnivorous, while at the same time it is at the posterior part that the false molars become tuberculous, induces us to consider the tooth just described as only a false molar; but the upper carnivorous has entirely disappeared, and the only regular false molar existing, supplies its place.

The next tooth has at its extreme edge the two principal tubercles of the first tuberculous teeth; at its internal edge there are two tubercles parallel to the two first, but separated from each other by a much smaller tubercle. This tooth is nearly twice as long as it is broad.

The last molar is one-third larger than the preceding, but its proportions are the same in relation to length and breadth; it has on its external edge, at the anterior part, two tubercles, which seem analogous to those of the preceding tooth, but rather smaller. At the internal border of the same part, there is a crest divided in three, by two small grooves. The posterior part is a projection or spur, making nearly a third of the extent of the tooth, and bordered by a crest irregularly divided by three principal grooves; all the interior of the crown is covered by small furrows and asperities, which are peculiar to the bears.

In the lower jaw the incisors are bilobated like those of the dog, and the canine are shaped at the sides like those of the upper jaw. The false molars are two or three in number, and sometimes

four; the first are at the base of the canine, the others are separated by an unoccupied interval, and have some relation to the true molars.

The first is larger than the second, and remains in the adult animal; the second extremely small, falls out with age, and in these different relations the third resembles it; the fourth alone has the regular form.

After this comes a tooth, narrow in proportion to its length, but not trenchant. We observe a tubercle on its anterior part, another on its external surface, and two smaller on its internal face, opposite the preceding. These four tubercles form nearly one-half of the tooth; to these succeed a deep groove, and the tooth terminates behind a pair of tubercles. The next molar, which is the largest tooth of this jaw, is very irregular in relation to the disposition of its grooves, tubercles, and the hollows or depressions which separate them. We may distinguish, however, two principal tubercles at its anterior half, one on its internal, and the other on its external face, which are united by a transverse crest; but these tubercles are subdivided, especially the internal one, by small depressions which separate it into two or three others. We may say the same of the posterior part, and, in fact, the engraving alone can give a clear idea of it, because it is much more irregular than the other. The last tooth is still less susceptible of a detailed description than the preceding; it is smaller, has an elliptic form, is bordered at its circumference by an irregularly notched crest, and is internally marked by still more irregular rugosities.

In their reciprocal position, all these teeth are opposed crown to crown, except the first lower molar,

whose external edge, at its anterior part, is in relation with the internal edge of the superior carnivorous: these are the only teeth belonging to animals of this genus suited to the comminution of flesh, which, in fact, they can but imperfectly perform.

[*The Brown Bear.*

Ursus Arctos: Lin. Erxleb. Bodd.
Ours: Buff. tom. 8, pl. 31, Briss. Reg. An. p. 258.
Alpine Bear of Europe.

This animal has so frequently been described as a native of this country, that persons unacquainted with the manner in which writers have copied each other, in relation to American natural history, may be surprised that we entirely reject the species as an inhabitant of the northern part of this continent.

It is true that various travellers have made an occasional mention of "brown bears," but there is abundant reason to believe that they have mistaken young or adult black bears, in a particular state of pelage, for them; this is rendered the more probable from the fact that no real "brown bear" has yet been seen by any of the expeditions which have traversed the vast forests, plains, and mountains of the western regions, where they would almost certainly have been encountered had they existed. Lewis and Clark, in several instances, speak of "Brown bears;" but these attentive observers expressly state, that they were uniformly found in the same districts, and were specifically the same as the Grizzly, white or variegated

bear, which we shall hereafter describe. We have made many inquiries of persons who have resided in parts of the country where the brown bear would most probably be found, if it were a native, but have not yet met with an individual who has seen any other species than the common black, or American bear, and the great grizzly bear of the West.

Taking all circumstances into consideration, we feel authorised to believe that the Ursus Arctos is not found in America, and in this belief we shall remain, at least until there is unequivocal testimony adduced to establish the contrary.]

Species 1.—*American, or Black Bear.*

Ursus Americanus.—Pallas.

Ours D'Amerique: Cuv. Men. du Mus.
Ours Guluire: Geoff. Coll. du Mus.

This bear is found throughout North America, from the shores of the Arctic Sea, to its most southern extremity. That they must have existed in vast numbers throughout this great extent of country, previous to its settlement by Europeans, we may readily conceive, from the immense number of skins of this animal which are procured even at the present day. From the year 1798 to 1802, one hundred and ninety-two thousand four hundred and ninety-seven bear skins were exported from Quebec, and in the year 1822, the Hudson's Bay company alone exported three thousand skins of the black bear.

Captains Lewis and Clark observed black bears on the wooded portions of the rocky mountains, and subsequently found them on the great plains of Columbia, and in the tract of country lying between these plains and the Pacific Ocean. They are occasionally found throughout the territories of the United States, in the wooded and mountainous regions, and in unsettled districts, where their skins are of great value to the inhabitants as a substitute for blankets and other manufactured woollens.

The black bear, under ordinary circumstances, is not remarkably ferocious, nor is he in the habit of attacking man without provocation. But when wounded, he turns on the aggressor with great fury, and defends himself desperately. This disposition is more fully manifested during the coupling season, because the males are then highly excited, and are not so inert and clumsy as in the autumn, when they are exceedingly fat.

If taken when young, this bear is readily domesticated, and taught numerous tricks; we see him frequently exhibited by itinerant showmen, as a "learned" bear, though it requires a long continuance of severe and cruel discipline to bring him to this state of "improvement." In captivity they are always remarkable for the persevering manner in which they keep moving backward and forward at the extremity of their chain, thus expressing their impatience of confinement, or rather, as if solicitous to take exercise.

This feeling of the necessity for exercise is manifested in an especial manner when the animal is confined in a very small cage, where he has not room

even to turn entirely round. Under such circumstances he perseveringly moves himself in every direction that his narrow limits will allow, stepping with his fore feet first to one side and then to the other, and finally, by raising and depressing his body quickly, as if jumping from the ground, he gives his whole frame a degree of exercise, which must tend to the preservation of his health and strength.

When the winters are severe at the north, and they find a difficulty of procuring food, they travel to the southern regions in considerable bodies. Dr. Libley states, in his report to the secretary of war, relative to the territory bordering on Red River, that from all the information he could gain, immense and almost incredible numbers of these animals descended the mountains, and passed southwardly into the timbered country.

The sight and hearing appear to be the most acute of the senses in this bear, as well as in those hereafter to be described. Although he kills many small animals, yet he does not follow them by the smell. When he walks, his gait is heavy and apparently awkward, and when running is not much less so, but his strength of body enables him to move with considerable celerity, and for a long time.

The females bring forth their young in the winter time, and exhibit for them a degree of attachment which nothing can surpass. They usually have two cubs, which are suckled until they are well grown. The fondness existing between the mother and cubs seems to be mutual, and no danger can separate her from them, nor any thing, short of death itself, induce her to forsake them.

"Near the old village of *Catharine*, in the state of New York, a young man of seventeen passing through the woods early in the morning, met with a young cub, which he pursued and caught, and seizing by the heels, swung it against a log repeatedly, to kill it. The noise it made alarmed the dam, and the lad, lifting his eyes, saw a large bear making towards him with great fury. Dropping the cub, he seized his gun in time to discharge the contents, which only wounded her, when instantly clubbing the musket, he belaboured her on the sides, snout, head, &c. till the stock of the gun was shivered, and the barrel wrenched and twisted in an extraordinary manner. After a sustained combat, in which the bear tore his clothes to pieces and scratched him severely, he took an opportunity (when, from the bleeding of her wounds and weakness, she began to flag,) to run away for assistance. On returning with his master they killed the old bear and both her cubs."*

A friend of the author's, while traversing a wood near Fort Snelling, on the Missouri, saw a she-bear accompanied by two cubs, (about the size of puppies at a month old) a short distance before him. The cubs immediately ascended a tree, and the dam, raising herself on her hind legs, sat erect at its foot in order to protect them: the rifle, discharged with a fatal aim, laid the parent lifeless on the earth. The hunter then approached and stirred the body with the butt of his gun, on which the little cubs hastily descended the tree and attacked him with great ear-

* Vide, Cyclop. Am. Ed. vol. iv.

nestness, attempting to bite his legs and feet, which their youth and want of strength prevented them from injuring. When he retired to a short distance, they returned to the dead body of their dam, and by various caresses and playful movements endeavoured to rouse her from that sleep which "knows no waking."

Black bears are still numerous in the wooded and thinly settled parts of Pennsylvania, as well as in most of the other states of the Union, and where their favourite food is plenteous they grow to a great size, and afford a large quantity of oil. BARTRAM relates that he was present at the cutting up of one which weighed five or six hundred pounds, and his hide was apparently as large as that of an ox of six or seven hundred weight.

The food of this animal is principally grapes, plums, whortle-berries, persimmons, bramble and other berries; they are also particularly fond of the acorns of the live oak, on which they grow excessively fat in Florida, &c. In attempting to procure these acorns they subject themselves to great perils, for after climbing these enormous oak-trees, they push themselves along the limbs towards the extreme branches, and with their fore-paws bend the twigs within reach, thus exposing themselves to severe and even fatal accidents in case of a fall. They are also very fond of the different kinds of nuts and esculent roots, and often ramble to great distances from their dens in search of whortle-berries, mulberries, and indeed all sweet flavoured and spicy fruits; birds, small quadrupeds, insects, and eggs, are also devoured by them whenever they can be

obtained. They are occasionally very injurious to the frontier settlers, by their incursions in search of potatoes and young corn, both of which are favourite articles of food; their claws enable them to do great mischief in potato grounds, as they can dig up a large number in a very short time, and where the bears are numerous their ravages are occasionally very extensive.

In the north, the flesh of the black bear is fittest for the table after the middle of July, when the berries begin to ripen, though some berries impart a very disagreeable flavour to their flesh. They remain in good condition until the following January or February; late in the spring they are much emaciated, and their flesh is dry and disagreeable in consequence of their long fasting through the season of their torpidity. Their flesh is also rendered rank and disagreeable by feeding on herring spawn, which they seek and devour with greediness, whenever it is to be obtained. The southern Indians kill great numbers of these bears at all seasons of the year, but no inducement can be offered to prevent them from singeing off the hair of all that are in good condition for eating, as the flesh of the bear is as much spoiled by skinning as pork would be; the skins these people bring the traders are consequently only such as are obtained from bears that are too poor to be eaten.

In the vicinity of Hudson's Bay the black bear has been observed to feed entirely on water-insects during the month of June, when the berries are not ripe. These insects, of different species, are found in astonishing quantities in some of the lakes, where,

being driven by gales of wind in the bays, and pressed together in vast multitudes, they die, and cause an intolerable stench by their putrefaction, as they lie in some places two or three feet deep.* The bear swims with his mouth open, and thus gathers the insects on the surface of the water: when the stomach of the animal is opened, at this season, it is found to be filled with them, and emits a very disagreeable stench. They are even believed to feed on those which die and are washed on shore. The flesh of the animal is spoiled by this diet, though individuals killed at a distance from the water are agreeably flavored at the same time of year.

The black bear is in fact very indiscriminate in his feeding; and though suited by nature for the almost exclusive consumption of vegetable food, yet refuses scarcely any thing when pressed by hunger. He is moreover voracious as well as indiscriminate in satisfying his appetite, and frequently gorges until his stomach loathes and rejects its contents. He seeks, with great assiduity, for the larvæ or grub-worms of various insects, and exerts a surprising degree of strength in turning over large trunks of fallen trees, which, whenever sufficiently decayed to admit of it, he tears to pieces in search of worms.

During the season when the logger-head turtles land in vast multitudes from the lagoons at the south, for the purpose of laying, the black bears come in droves to feast on their eggs, which they dig out of

---

* See Hearnes' Journey, p. 371, 8vo. ed.

the sand very expeditiously, and they are so attentive to their business, that the turtle has seldom left the place for a quarter of an hour, before the bear arrives to feast on her eggs.

While Major Long's party were passing through the country west of the Missouri, they often saw black bears, which they observed most commonly to feed on grapes, plumbs, dog-wood berries, &c.; but they were also frequently seen disputing with the wolves and buzzards for a share of the carcasses of animals abandoned by the hunters, or of such as had perished by disease. When the bear seizes a living animal, he does not, as most other beasts do, first put it to death, but tears it to pieces and devours it, without being delayed by its screams or struggles, and may be actually said to swallow it alive.

Dupratz, who has been properly considered an intelligent and veracious historian, relates the following circumstance, in his History of Louisiana, to prove that the black bear is by no means carnivorous. We must in this case believe that he was misinformed, or mistaken, since this bear is well known to feed on flesh, even where the provocation is much less than that he relates.

"The black bears," says he, "appeared in Louisiana during the winter, being driven from the northern regions by the snow which covered the earth, and prevented them from obtaining their food. They fed on fruits, acorns, and roots, and were most fond of honey and milk, which, when obtained, they would sooner be killed than relinquish. In spite of the prejudice which supposes this bear to be carni-

vorous, I maintain, with all the inhabitants of this province and the surrounding country, that this is not the fact. It has never happened that they have devoured a man, notwithstanding their numbers and the extreme hunger they sometimes suffer; they even do not eat flesh when it is thrown in their way. During the time that I resided at Natchez, there was a very severe winter in the northern regions, and the black bears came south in great numbers; they were so numerous that they were all starving and very poor. Their great hunger drove them out of the woods bordering the river; they were seen at night entering yards which were not well closed, and where fresh meat was exposed, yet they left it untouched, and ate nothing but such grain as they could find. It was certainly on such occasions that their carnivorous disposition should have been displayed. They never killed animals to devour them, and so little carnivorous are they, that they abandon the snow-covered countries, where they could kill men and animals at pleasure, to wander so far to the south, in search of fruits and roots that a carnivorous animal would not touch." Sweet creatures!—either the Abbé Dupratz was sadly misinformed, or the disposition of the black bear has astonishingly deteriorated since the year 1755, as those of the present day, so far from refusing meat left in their way, will break into enclosures in search of it, and if opportunity offers, when pressed by hunger, they do not scruple to kill pork for their own use.

The following instance occurred in the western part of the state of New York, in the year 1824. The back window of a farm-house was forced open

one night, and a considerable quantity of pork carried off. The proprietor, without suspecting the nature of the plunderer, placed a loaded musket opposite the window, having a string so adjusted that the gun would be discharged by any thing attempting to enter the room through the window. During the night the report of the gun was heard, and in the morning the body of a large black bear was found at a short distance from the spot where he had received his death wound.

The usual residence of the black bear is in the most remote and secluded parts of the forest, where his den is either in the hollow of some decayed tree, or in a cavern formed among the rocks. To this place he retires when his hunger is appeased, and in the winter he lies coiled up there during the long period of his torpidity. The female of the black bear, during the period of gestation, which commences in the month of October, and continues for about one hundred and twelve days, leads a retired and concealed life,—for we have not a single instance on record of a pregnant bear being killed either by white men or Indians, though the mother and very young cubs are frequently destroyed. During an extremely hard winter the inhabitants of the borders of James' river, Virginia, killed several hundred bears, among which two only were females, and those not with young.

In the northern parts of this continent, the subterraneous retreats of the black bear may be readily discovered by the mist which uniformly hangs about the entrance of the den, as the animal's heat and breathing prevent the mouth of the cave from be-

ing entirely closed, however deep the snow may be. As the black bear usually retires to his winter quarters before any quantity of snow has fallen, and does not again venture abroad, if undisturbed, until the end of March or beginning of April, he must consequently spend at least four months in a state of torpidity, and without obtaining food. It is therefore not surprising that, although the bear goes into his winter quarters in a state of excessive fatness, he should come out in the spring of the year extremely emaciated.

The northern Indians occasionally destroy the bear by blocking up the mouth of the cave with logs of wood, and then, breaking open the top of it, kill the animal with a spear or gun; yet this method is considered both cowardly and wasteful, as the bear can neither escape nor offer the slightest injury to his disturbers. Sometimes they throw a noose round his neck, draw him up to the top of the hole, and kill him with a hatchet.

The black bear is occasionally captured in large and strong steel-traps, well secured by a chain to a neighbouring tree, and laid in a path over which a freshly-killed carcass has been drawn along,—or he is taken in a noose suspended from a strong sapling. A common mode of hunting this animal is to follow him with two or three well trained dogs. When he finds that he is pursued, he generally pushes directly forward for eight or ten miles, or farther, if not overtaken; as the dogs come up with him their repeated attacks cause him to turn for the purpose of striking at them, and if they do not dexterously avoid his blows they will be killed, as he strikes with very

great force. To avoid the vexation produced by the dogs, he mounts a tree, ascending for twenty or thirty feet, but is allowed very little rest, for the hunter now approaching, he throws himself to the earth, and hurries onwards, being still pursued and worried by the dogs. Again he is obliged to take refuge in a tree, and sometimes climbs as near as possible to the top, endeavouring to conceal himself among the foliage. The hunter now strikes against the trunk of the tree, as if engaged in cutting it down; the poor bear soon betrays his hiding place, and slipping to the end of the longest branch, gathers his body up, and drops from a vast height to the ground, whence he often appears to rebound for several feet, and then runs off as actively as he can. At length, worn out by frequently repeated exertions to escape, he is finally shot, while attempting to screen himself by aid of the trunk of a tree, or while employed in resisting the attacks of the dogs.

Among other modes of killing the black bear the Indians employ a trap composed of logs, which, when the animal attempts to remove the bait, either falls on his body and kills him outright, or secures him until he is put to death by the proprietor of the snare. Our enterprising countryman, SCHOOLCRAFT, relates an instance of his having seen one thus caught. "The animal sat up on his fore-paws facing us, the hinder paws being pressed to the ground by a heavy weight of logs, which had been arranged in such a manner as to allow the bear to creep under, and by seizing the bait he had sprung the trap and could not extricate himself, although with his fore-paws he had demolished a part of the works. After view-

ing him for some time a ball was fired through his head, but it did not kill him. The bear kept his position and seemed to growl in defiance. A second ball was aimed at the heart, and took effect, but he did not resign the contest immediately, and was at last despatched with an axe. As soon as the bear fell, one of the Indians walked up, and addressing him by the name of *muck-wah*, shook him by the paw, with a smiling countenance, as if he had met with an old acquaintance, saying, in the Indian language, he was sorry they had been under the necessity of killing him, and hoped the offence would be forgiven, especially as the *che-mock-o-men* (white men) had fired one of the balls."

The Indians consider this bear as one of the noblest objects of the chase, and they always manifest the highest degree of exultation when they are successful in killing one. Every part of the animal is valuable to them, even to its intestines and claws; the latter are bored at the base and strung on deer sinews to be worn as ornaments. The flesh is considered most delicious food, and the fore-paws as an exquisite dainty.

The fat of the bear is accumulated in different parts of the body to an excessive degree towards autumn, after the animal has been plentifully supplied with food; the oil obtained by liquefying it, is a well known popular remedy against baldness, as well as for rubbing stiff or rheumatic joints. The fat obtained from the paws is most highly prized, either because it is most difficult to procure in any quantity, or because it is really finer than that obtained from the body generally. It is very certain that few, or

indeed perhaps none, of the animal oils are finer when properly prepared than that of the bear, and hence, in any case where the external application of oil is thought to be proper, bear's oil will be preferable to any other; but that it possesses many other virtues except those depending on its tenuity, we are not prepared to admit.

The black bear, like all the species of this genus, is very tenacious of life, and seldom falls unless shot through the brain or heart. An experienced hunter never advances on a bear that has fallen, without first stopping to load his rifle, as the beast frequently recovers to a considerable degree, and would then be a most dangerous adversary. The skull of the bear appears actually to be almost impenetrable, and a rifle-ball, fired at a distance of ninety six yards, has been flattened against it, without appearing to do any material injury to the bone. The best place to direct blows against the bear is upon his snout; when struck elsewhere, his dense woolly coat, thick hide, and robust muscles, render manual violence almost entirely unavailing.

When the bear is merely wounded, it is very dangerous to attempt to kill him with such a weapon as a knife or tomahawk, or indeed any thing which may bring one within his reach. In this way hunters and others have paid very dearly for their rashness, and barely escaped with their lives; the following instance may serve as an example of the danger of such an enterprise:

"Mr. Mayborne, who resides in Ovid township, Cayuga county, between the Seneca and Cayuga lakes, in the state of New York, went one afternoon

through the woods in search of his horses, taking with him his rifle and the only load of ammunition he had in the house. On his return home, about an hour before dusk, he perceived a very large bear crossing the path, on which he instantly fired, and the bear fell, but immediately recovering his legs, made for a deep ravine a short way onwards. Here he tracked him awhile by the blood, but night coming on, and expecting to find him dead in the morning, he returned home. A little before day-break the next morning, taking a pitchfork and hatchet, and his son, a boy of ten or eleven years of age with him, he proceeded to the place in quest of the animal. The glen or ravine into which he had disappeared the evening before, was eighty or ninety feet from the top of the bank to the brook below: down this precipice a stream of three or four yards in breadth is pitched in one unbroken sheet, and, forming a circular basin or pool, winds away among the thick underwood. After reconnoitering every probable place of retreat, he at length discovered the bear, who had made his way up the other side of the ravine, as far as the rocks would admit, and sat under a projecting cliff, stedfastly eyeing the motions of his enemy. Mayborne, desiring his boy to remain where he was, took the pitchfork, and descending to the bottom, determined from necessity to attack him from below. The bear kept his position until the man approached within six or seven feet, when on the instant, instead of being able to make a stab with the pitchfork, he found himself grappled by the bear, and both together rolled towards the pond, at least twenty or twenty-five feet, the bear biting on his left arm, and hug-

ging him almost to suffocation. By great exertion he thrust his right arm partly down his throat, and in that manner endeavoured to strangle him, but was once more hurled headlong down through the bushes, a greater distance than before, into the water.—Here, finding the bear gaining on him, he made one desperate effort and drew the animal's head partly under water, and repeating his exertions, at last weakened him so much, that calling to his boy, who stood on the other side in a state little short of distraction for the fate of his father, to bring him the hatchet, he sunk the edge of it by repeated blows into the brain of the bear. This man, although robust and muscular, was scarcely able to crawl home, where he lay for nearly three weeks, the flesh of his arm being much crushed, and his breast severely mangled. The bear weighed upwards of four hundred pounds."

The black bear, in common with other species of the genus, endeavours to suffocate an adversary by violently hugging and compressing its chest. A man might end such a strgggle in a few instants, if one hand be sufficiently at liberty to grasp the throat of the animal with the thumb and fingers, externally, just at the root of the tongue, as a slight degree of compression there will generally suffice to produce a spasm of the glottis, that will soon suffocate it beyond the power of offering resistance or doing injury.

The black bear differs from other species of the genus by having the nose and forehead nearly on the same line, though the forehead is slightly prominent. This projection of the front is less at the

upper part than in the brown bear of Europe.* The palms of the hands and soles of the feet are very short, and the whole body is covered with long, shining, straight black hair, which is by no means harsh to the touch. The sides of the face are marked with fawn colour, and a small spot of the same exists in some individuals in front of the eye; others have the muzzle of a clear light yellow, with a white line commencing on the root of the nose and reaching to each side of the angle of the mouth. This continues over the cheek to a large white space, mixed with a slight fawn colour, covering the whole of the throat, whence a narrow line descends upon the breast. It was this variety which Geoffroy called *Ours Gulaire*. The yellow bear of Carolina is also a variety of the black or American bear. Capt. FRANKLIN saw adults of this species in the vicinity of Cumberland house which were red, and remarked that the cubs of these red bears were black; while the cubs of the black individuals were as frequently of a red colour.

* We are informed by Capt. J. LE CONTE, who, as a naturalist, ranks deservedly high, that the black bear is distinguished with still greater certainty from the brown or European bear by having one more molar tooth than that animal.

C.A. Lesueur. Del.

F. Kearny Sc.

1. Black Bear 2. Grizzly Bear.

Species II.—*The Grizzly Bear.*

Ursus Horribilis.—Ord.

Ursus Horribilis. Say. Long's Exped. to the Rocky Mountains vol. ii.
Ursus Cinereus. Desm. Mam. p 164.
Ursus Ferox. The Grizzly, White, Variegated and Brown Bear of Lewis & Clark.*

This bear; justly considered as the most dreadful and dangerous of North American quadrupeds, is the despotic and sanguinary monarch of the wilds over which he ranges. Gigantic in size, and terrific in aspect, he unites to a ferociously blood-thirsty disposition a surpassing strength of limb, which gives him undisputed supremacy over every other quadruped tenant of the wilderness, and causes man himself to tremble at his approach, though possessed of defensive weapons unknown to any but the human race. To the Indians the very name of the Grizzly Bear is dreadful, and the killing of one is esteemed

* In the English translation of Cuvier's Regne Animal, the translator has given to this bear the name of *Ursus Candescens*, proposed by Major Hamilton Smith, which must of necessity be rejected, along with all others, except the one we have adopted, because no person has a right to change a name given by the original describer of an animal, according to the rules now well established, and almost universally accepted by naturalists, to prevent the confusion resulting from changes of nomenclature, which are frequently proposed with no better reason than the mere pleasure of an individual. Say, who first systematically described this species, adopted the name proposed for it by Ord, which cannot now, with any shadow of propriety, be changed.

equal to a great victory:—the white hunters are almost always willing to avoid an encounter with so powerful an adversary, and seldom or never wantonly provoke his anger.

This formidable bear unhesitatingly pursues and attacks men or animals, when excited by hunger or passion, and slaughters indiscriminately every creature whose speed or artifice is not sufficient to place them beyond his reach. The Bison, whose size and imposing appearance might seem to be a sufficient protection, does not always elude his grasp, as the grizzly bear is strong enough to overpower this animal, and drag its carcass to a convenient place to be deposited and devoured at leisure.

However singular it may appear that an animal endowed with such a fondness for destruction and blood, can exist altogether on vegetable food, it is a fact that the grizzly bear, no less than all other species belonging to the same genus, is capable of subsisting exclusively on roots and fruits: this may be inferred from the peculiarities of their system of dentition. It is by no means surprising that hunters and travellers should suppose the grizzly bear to be almost wholly carnivorous, seeing that he displays such an unappeasable ferocity of disposition, and so uniform an eagerness to destroy the life of any animal that falls within his power.

This bear at present inhabits the country adjacent to the eastern side of the Rocky Mountains, where it frequents the plains, or resides in the copses of wood which skirt along the margin of water courses. There is some reason to believe that the grizzly bear once inhabited the Atlantic regions of the Uni-

ted States, if we may be allowed to form any inference from traditions existing among the Delaware Indians, relative to the Big Naked Bear which formerly existed on the banks of the Hudson. The venerable HECKEWELDER informs us that Indian mothers used to frighten their children into quietness by speaking to them of this animal.

Notwithstanding it was mentioned a long time since by LA HONTAN and other writers, it has been but recently established as a distinct species in the works of systematic Zoologists. SAY was the first to give a full description of it, in the well known work we have quoted at the head of this article.

Two cubs of the grizzly bear were some time since kept alive in the menagery of PEALE'S (now the Philadelphia) Museum. When first received they were quite small, but speedily gave indications of that ferocity for which this species is so remarkable. As they increased in size they became exceedingly dangerous, seizing and tearing to pieces every animal they could lay hold of, and expressing extreme eagerness to get at those accidentally brought within sight of their cage, by grasping the iron bars with their paws and shaking them violently, to the great terror of spectators, who felt insecure while witnessing such displays of their strength. In one instance an unfortunate monkey was walking over the top of their cage, when the end of the chain which hung from his waist dropped through within reach of the bears; they immediately seized it, dragged the screaming animal through the narrow aperture, tore him limb from limb, and devoured his mangled carcass almost instantaneously. At another time a

small monkey thrust his arm through an opening in the bear cage to reach after some object; one of them immediately seized him, and, with a sudden jerk, tore the whole arm and shoulder-blade from the body, and devoured it before any one could interfere. They were still cubs, and very little more than half grown, when their ferocity became so alarming as to excite continual apprehension lest they should escape, and they were killed in order to prevent such an event.

To the venerable founder of the Philadelphia Museum, CHARLES WILLSON PEALE, to whom American students of natural history are under the most lasting obligations for his zeal and liberality, we are indebted for the following letter, written by the gallant and lamented PIKE, relative to the two grizzly bears above mentioned:

Washington, Feb. 3d, 1808.

SIR,—I had the honor of receiving your note last evening, and in reply to the inquiries of Mr. PEALE, can only give the following notes:

The bears were taken by an Indian in the mountains which divide the large western branches of the Rio Del Norte, and some small rivers which discharge their waters into the east side of the gulf of California, near the dividing line between the provinces of Biscay and Senora. We happened at the time to be marching along the foot of those mountains, and fell in with the Indian who had them, when I conceived the idea of bringing them to the United States, for your Excellency, although then more than 1600 miles from our frontier post, (Natchitoches) purchased them of the savage, and for

three or four days made my men carry them in their laps, on horseback. As they would eat nothing but milk, they were in danger of starving. I then had a cage prepared for both, which was carried on a mule, lashed between two packs, but always ordered them to be let out the moment we halted, and not shut up again until we were prepared to march. By this treatment they became extremely docile when at liberty, following my men (whom they learned to distinguish from the Spanish dragoons by their always feeding them and encamping with them,) like dogs through our camps, the small villages and forts where we halted. When well supplied with sustenance they would play like young puppies with each other and the soldiers; but the instant they were shut up and placed on the mule they became cross, as the jostling of the animal knocked them against each other, and they were sometimes left exposed to the scorching heat of a vertical sun for a day without food or a drop of water, in which case they would worry and tear each other, until nature was exhausted, and they could neither fight nor howl any longer. They will be one year old on the first of next month, (March, 1808) and, as I am informed, they frequently arrive at the weight of eight hundred pounds.

Whilst in the mountains we sometimes discovered them at a distance, but in no instances were we ever able to come up with one, which we eagerly sought, and *that* being the most inclement season of the year, induces me to believe they seldom or never attack a man unprovoked, but defend themselves courage-

ously;* an instance of this kind occurred in New Mexico, whilst I sojourned in that province;—three of the natives attacked a bear with their lances, two of whom he killed, and wounded the third, before he fell the victim.

With sentiments of the
highest respect and esteem,
Your obedient servant,
Z. M. PIKE.

His Excellency, Thomas Jefferson,
President of the United States.

The grizzly bear is remarkably tenacious of life, and on many occasions numerous rifle-balls have been fired into the body of an individual without much apparent injury. Instances are related by the travellers who have explored the countries in the vicinity of the Rocky Mountains, of from ten to fourteen balls having been discharged into the body of one of these bears before it expired. In confirmation of these statements we shall here introduce some sketches from narratives given in the journals of Lewis and Clark, and Long's Expedition to the Rocky Mountains.

One evening the men in the hindmost of one of Lewis and Clark's canoes perceived one of these

* It is very possible that the bears thus seen, may have been common black bears; the reader will find in the sequel abundant proofs that it is not difficult to come up with the grizzly bear, and that this animal does not often wait to be attacked.

bears lying in the open ground about three hundred paces from the river, and six of them, who were all good hunters, went to attack him. Concealing themselves by a small eminence, they were able to approach within forty paces unperceived; four of the hunters now fired, and each lodged a ball in his body, two of which passed directly through the lungs. The bear sprang up and ran furiously with open mouth upon them; two of the hunters, who had reserved their fire, gave him two additional wounds, and one breaking his shoulder-blade, somewhat retarded his motions. Before they could again load their guns, he came so close on them, that they were obliged to run towards the river, and before they had gained it the bear had almost overtaken them. Two men jumped into the canoe; the other four separated, and concealing themselves among the willows, fired as fast as they could load their pieces. Several times the bear was struck, but each shot seemed only to direct his fury towards the hunter; at last he pursued them so closely that they threw aside their guns and pouches, and jumped from a perpendicular bank, twenty feet high, into the river. The bear sprang after them, and was very near the hindmost man; when one of the hunters on the shore shot him through the head, and finally killed him. When they dragged him on shore, they found that eight balls had passed through his body in different directions.

On another occasion the same enterprising travellers met with the largest bear of this species they had ever seen; when they fired he did not attempt to attack, but fled with a tremendous roar, and such was

his tenacity of life, that although five balls had passed through the lungs, and five other wounds were inflicted, he swam more than half across the river to a sand bar, and survived more than twenty minutes. This individual weighed five or six hundred pounds at least, and measured eight feet seven inches and a-half from the nose to the extremity of the hind-feet, five feet ten inches and a-half around the breast, three feet eleven inches around the middle of the fore-leg, and his claws were four inches and three-eighths long.

In fact, the chance of killing the grizzly bear by a single shot is very small, unless the ball penetrates the brain, or passes through the heart. This is very difficult to effect, since the form of the skull, and the strong muscles on the side of the head, protect the brain against every injury except a very truly aimed shot, and the thick coat of hair, the strong muscles and ribs, make it nearly as difficult to lodge a ball fairly in the heart.

Governor CLINTON, in the notes to his discourse delivered before the Literary and Philosophical Society of New York, says, "that Dixon, an Indian trader told a friend of his, that this animal had been seen *fourteen feet long*; that notwithstanding its ferocity, it had been occasionally domesticated, and that an Indian belonging to a tribe on the head waters of the Mississippi, had one in a reclaimed state, which he sportively directed to go into a canoe belonging to another tribe of Indians, then returning from a visit: the bear obeyed, and was struck by an Indian. Being considered as one of the family, this was deemed an insult, resented accordingly, and produced a war between these nations."

Mr. JOHN DOUGHERTY, a very experienced and respectable hunter, who accompanied Major LONG's party during their expedition to the Rocky Mountains, several times very narrowly escaped from the grizzly bear. Once, while hunting with another person on one of the upper tributaries of the Missouri, he heard the report of his companion's rifle, and when he looked round, beheld him at a short distance endeavouring to escape from one of these bears, which he had wounded as it was coming towards him. Dougherty, forgetful of every thing but the preservation of his friend, hastened to call off the attention of the bear, and arrived in rifle-shot distance just in time to effect his generous purpose. He discharged his ball at the animal, and was obliged in his turn to fly; his friend relieved from immediate danger, prepared for another attack by charging his rifle, with which he again wounded the bear, and saved Mr. D. from further peril. Neither received any injury from this encounter, in which the bear was at length killed.

On one occasion several hunters were chased by a grizzly bear, who rapidly gained upon them. A boy of the party, who could not run so fast as his companions, perceiving the bear very near him, fell with his face toward the ground. The bear reared up on his hind-feet, stood for a moment, and then bounded over him in pursuit of the more distant fugitives.

Mr. DOUGHERTY, the hunter before mentioned, relates the following instance of the great muscular strength of the grizzly bear: Having killed a Bison, and left the carcass for the purpose of procuring as-

sistance to skin and cut it up, he was very much surprised on his return to find that it had been dragged off, whole, to a considerable distance, by a grizzly bear, and was then placed in a pit, which the animal had dug with his claws for its reception.

This bear strikes a very violent blow with its fore-paws, and the claws inflict dreadful wounds. One of the cubs before mentioned as belonging to the Philadelphia Museum, struck the other a blow over part of its back and shoulder, which produced a large wound like a sabre cut. It is stated in Long's Expedition, that a hunter received a blow from the fore-paw of a grizzly bear, which destroyed his eye and crushed his cheek bone.

The grizzly bear is unable to climb trees like other bears; he is much more intimidated by the voice than the aspect of man, and on some occasions, when advancing to attack an individual, he has turned and retired merely in consequence of the screams extorted by fear. The degree of ferocity exhibited by the grizzly bear appears to be considerably influenced by the plenty or scarcity of food in the region it inhabits.

Anterior to the time of Lewis and Clark's expedition, nothing very satisfactory was known relative to this bear, and it was not until the publication of the journal of Long's Expedition to the Rocky Mountains, that a correct scientific description was given by that distinguished naturalist, SAY.

It may be with certainty distinguished from all the known species of this genus, by its elongated claws, and the rectilinear or slightly arched figure of its facial profile. Its general appearance may be com-

pared with the Alpine bear of Europe, (U. Arctos) especially with the Norwegian variety. The Alpine bear has not the elongated claws, and the facial space is deeply indented between the eyes.—This bear is also a climber; the grizzly bear is not.

On the front of the grizzly bear the hair is short, and between and anterior to the eyes it is very much so. On the rest of the body it is long and very thickly set, being blacker and coarser on the legs, feet, shoulders, throat, behind the thighs, and beneath the belly; on the snout it is paler. The ears are short and rounded, the forehead somewhat convex or arcuated, and the line of the profile continues on the snout without any indentation between the eyes.

The eyes are quite small, and have no remarkable supplemental lid. The iris is of a light reddish brown, or burnt Sienna colour. The muffle of the nostrils is black, and the sinus very distinct and profound. The lips are capable of being extended anteriorly, especially the upper one, which has on it a few more rigid hairs or bristles than the lower lip. The tail, which is very short, is concealed by the hair. The length of the hair gradually diminishes on the legs, but is still ample in quantity on the upper part of the foot.

The claws on the fore-feet are slender and elongated, and the fingers have five sub-oval naked tubercles, separated from the palm, each other, and the base of the claws, by dense hair. The anterior half of the palm is naked, and is of an oval figure transversely,—the base of the palm has a rounded naked tubercle encircled by hair.

The soles of the (hind) feet are naked, and the

nails are more curved and not so long as those on the fore-paws. The nails are not in the least diminished at tip, but they grow sharper at that part only by lessening from beneath.*

The colour of the grizzly bear varies very considerably, according to age and its particular state of pelage. Hence they have been described as brown, white, and variegated, by Lewis and Clark, although evidently of the same species, judging by all the other characters. The colour of the young animal approaches more nearly to the brown bear of Europe than any other; in advanced life the colour is that peculiar mixture of white, brown, and black, which has procured for this bear the appropriate designation of "Grizzly."

The following are the dimensions of the specimens preserved in the Philadelphia Museum, as given by SAY.

Length from the tip of the nose to the origin of the tail - - - - -	5 ft. 2 in.
The tail exclusive of the hair at tip,	1¾
From the anterior base of the ear to the tip of the nose, - - -	6
Orbit of the eye, - - - - -	⅞
Between the eyes, - - -	4⅔
Ears from their superior base, - - -	3
Longest claw of the fore-foot, - -	4⅕
Shortest, - - - - -	2¾
Longest claw of the hind-foot, - -	3
Shortest, - - - - -	1¾

* Ursi Horribilis testes saccis duobus distinctis, etiam ad latuor pollicum segregatis, pendunt.

1

2

C.A. Lesueur. Del

F.Kearny. Sc.

Brown Bear. Polar Bear.

Hair at the tip of the tail,	4½ in.
Length of the hair on the top of the head,	1¾ to 2
Beneath the ears,	2½ to 3½
On the neck above,	3
On the shoulders above,	4½
On the throat,	4
On the belly and behind the fore legs the longest hairs are	6

These measurements are taken from two individuals which were by no means full grown, as may be perceived by comparing them with the measurements heretofore cited from Lewis and Clark.—They will serve, however, to give a fairer idea of the proportions of this animal than any which have been previously given, as they are so much more detailed and very carefully made.

Species III.—*The Polar Bear.*

Ursus Maritimus.—Lin.

Ursus Albus; Briss. Régne Anim. p. 260. Sp. 2.
Ours Blanc; Buff. Supp. tom. 3. pl. 34.
Ours Blanc; Desm. Mam. p. 16. Sp. 257.
The Polar Bear; Pen. Syn. quad. p. 192. tab. 20. fig. 1. Pallas, spicil. Zool. XIV. tab. 1.

In the desolate regions of the north, where unrelenting winter reigns in full appanage of horrors during the greater part of the year, and even the stormy ocean itself is long imprisoned by "thick ribbed ice," the Polar Bear finds his most congenial abode. There, prowling over the frozen wastes, he

satiates his hunger on the carcasses of whales deserted by the adventurous fishermen, or seizes on such marine animals as come up to bask in open air; and when occasion calls, he fearlessly plunges into the sea in pursuit of his prey, as if the deep were his native and familiar element. To most other animals extreme cold is distressing and injurious; to him it is welcome and delightful: to him the glistening ice-bank or snow-wreathed shore, canopied by louring and tempestuous clouds, are far more inviting and agreeable, than verdant hills or sunny skies.

Being endowed with extremely acute senses, great strength, and a savagely ferocious disposition withal, it is not surprising that this animal is dreaded as the most formidable quadruped of the region he inhabits. Notwithstanding his great size and apparent heaviness, he is very active, and though his ordinary gait may appear clumsy, when excited by rage or hunger, his speed on the ice far exceeds that of the swiftest man.

When on an extensive ice-field, the polar bear is often observed to ascend the knobs or hummocks, for the purpose of reconnoitering, or he stands with head erect to snuff the tainted air, which informs him where to find the whale carrion at astonishing distances. This substance, so unpleasant and disgusting to human sense, is a luxurious banquet to the bear, and a piece of it thrown on a fire will allure him from a distance of several miles.

A considerable part of the Polar bear's food is supplied by seals, but very probably he suffers long fasts and extreme hunger, owing to the peculiar vigilance of these creatures; occasionally he is much

reduced by being carried out to sea on a small island of ice, where he may be forced to remain for a week or more without an opportunity of procuring food. In this situation they have been seen on ice-islands two hundred miles distant from land, and sometimes they are drifted to the shores of Iceland, or Norway, where they are so ravenous as to destroy all the animals they find. Most commonly such invaders are soon destroyed, as the natives collect in large numbers and commence an immediate pursuit, but frequently do not succeed in killing them, before many of their flocks are thinned. An individual polar bear has occasionally been carried on the ice as far south as Newfoundland, but this circumstance very rarely occurs.

This animal swims excellently, and advances at the rate of three miles an hour. During the summer season he principally resides on the ice-islands, and leaves one to visit another, however great be the distance. If interrupted while in the water, he dives and changes his course; but he neither dives very often, nor does he remain under water for a long time. Captain Ross saw a polar bear swimming midway in Melville Sound, where the shores were full forty miles apart, and no ice was in sight large enough for him to have rested on. The best time for attacking him is when he is in the water; on ice or land he has so many advantages that the aggressor is always in danger. Even in the water he has frequently proved a formidable antagonist, has boarded and taken possession of a small boat, forcing the occupants to seek safety by leaping overboard. Instances are related in which this animal has climbed up the sides

of small vessels, and been with difficulty repelled from the deck.

Generally the polar bear retreats from man; but when pursued and attacked he always resents the aggression, and turns furiously on his enemy. When struck at with a lance, he is very apt to seize and bite the staff in two, or wrest it from the hands. Should a ball be fired at him, without taking effect in the head or heart, his rage is increased, and he seeks revenge with augmented fury. It has been remarked that, when wounded and able to make his escape, he applies snow to the wound, as if aware that cold would check the flow of blood.

A great majority of the fatal accidents following engagements with the polar bear, have resulted from imprudently attacking the animal on the ice. Scoresby, in his interesting narrative of a voyage to Greenland, relates an instance of this kind. "A few years ago, when one of the Davis's Strait whalers was closely beset among the ice at the 'south west,' or on the coast of Labrador, a bear that had been for some time seen near the ship, at length became so bold as to approach alongside, probably tempted by the offal of the provision thrown overboard by the cook. At this time the people were all at dinner, no one being required to keep the deck in the then immoveable condition of the ship. A hardy fellow who first looked out, perceiving the bear so near, imprudently jumped upon the ice, armed only with a handspike, with a view, it is supposed, of gaining all the honour of the exploit of securing so fierce a visitor by himself. But the bear, regardless of such weapons, and sharpened probably by hunger, disarm-

ed his antagonist, and seizing him by the back with his powerful jaws, carried him off with such celerity, that on his dismayed comrades rising from their meal and looking abroad, he was so far beyond their reach as to defy their pursuit."

"A circumstance, communicated to me by Capt. Munroe of the Neptune, of rather a humorous nature as to the result, arose out of an equally imprudent attack made on a bear, in the Greenland fishery of 1820, by a seaman employed in one of the Hull whalers. The ship was moored to a piece of ice, on which, at a considerable distance, a large bear was observed prowling about for prey. One of the ship's company, emboldened by an artificial courage, derived from the free use of rum, which in his economy he had stored for special occasions, undertook to pursue and attack the bear that was within view. Armed only with a whale-lance, he resolutely, and against all persuasion, set out on his adventurous exploit. A fatiguing journey of about half a league, over a yielding surface of snow and rugged hummocks, brought him within a few yards of the enemy, which, to his surprise, undauntedly faced him, and seemed to invite him to the combat. His courage being by this time greatly subdued, partly by evaporation of the stimulus, and partly by the undismayed and even threatening aspect of the bear, he levelled his lance, in an attitude suited either for offensive or defensive action, and stopped. The bear also stood still; in vain the adventurer tried to rally courage to make the attack; his enemy was too formidable, and his appearance too imposing. In vain also he shouted, advanced his lance, and made feints of attack; the

enemy, either not understanding or despising such unmanliness, obstinately stood his ground. Already the limbs of the sailor began to quiver; but the fear of ridicule from his messmates had its influence, and he yet scarcely dared to retreat. Bruin, however, possessing less reflection, or being regardless of consequences, began, with audacious boldness, to advance. His nigh approach andunshaken step subdued the spark of bravery and that dread of ridicule that had hitherto upheld our adventurer; he turned and fled. But now was the time of danger; the sailor's flight encouraged the bear in turn to pursue, and being better practised in snow-travelling, and better provided for it, he rapidly gained upon the fugitive. The whale-lance, his only defence, encumbering him in his retreat, he threw it down, and kept on. This fortunately excited the bear's attention; he stopped, pawed it, bit it, and then renewed the chase. Again he was at the heels of the panting seaman, who, conscious of the favourable effects of the lance, dropped one of his mittens; the stratagem succeeded, and while Bruin again stopped to examine it, the fugitive, improving the interval, made considerable progress a-head. Still the bear resumed the pursuit with a most provoking perseverance, except when arrested by another mitten, and, finally, by a hat, which he tore to shreds between his fore-teeth and paws, and would, no doubt, soon have made the incautious adventurer his victim, who was now rapidly losing strength, but for the prompt and well-timed assistance of his shipmates—who, observing that the affair had assumed a dangerous aspect, sallied out to his rescue. The little phalanx

opened him a passage, and then closed to receive the bold assailant. Though now beyond the reach of his adversary, the dismayed fugitive continued onwards, impelled by his fears, and never relaxed his exertions, until he fairly reached the shelter of his ship. The bear once more came to a stand, and for a moment seemed to survey his enemies with all the consideration of an experienced general; when, finding them too numerous for a hope of success, he very wisely wheeled about, and succeeded in making a safe and honourable retreat.*"

The polar bear is stated to be generally four or five feet high, from seven to eight feet long, and nearly the same in circumference. Individuals have frequently been met with of much greater size; Barentz killed one in Cherie Island, whose skin measured thirteen feet.† The weight is generally from six to eight hundred pounds. The hair of the body is long, and of a yellowish white colour, and is very shaggy about the inside of the legs. The paws are seven inches or more in breadth, with claws two inches long. In some individuals, the canine teeth

---

* Scoresby's Greenland Voyage.

† Desmarest states in a note that the largest individuals of this species which have been observed, are not more than six feet seven inches long. This does not agree with the accounts given by many northern voyagers: we have selected Captain Ross's measurements, (not because the individual from which they were taken is the largest that has been seen, but) because his scientific character is so generally and advantageously known. It would have been very easy to have selected measurements of larger specimens, from other sources.

have been found an inch and a-half long, exclusive of the portion imbedded in the jaw: the strength of the jaws is very great, and enables the animal to inflict dreadful injury when he bites.

The following measurements are from an individual, killed during Capt. Ross's voyage, in the vicinity of Prince William's Sound:—

Length, from the snout to the tail,	6 ft.	8 in.
to the shoulder-blade,	2	10
Circumference near the fore-legs,	6	
of the neck, - -	3	2
Breadth of the fore-paw, - -		10
of the hind-foot, - -		8½
Circumference of the hind-leg,	1	10
of the fore-leg,	1	8
of the snout, before the eyes, -	1	8
Length of the snout to the occiput,	1	6
Height to the fore-shoulder, -	4	
Fore-claws, - - - -		2½
Hind-claws, - - - -		1¾
Tail, - - - - -	4	

Weight of the animal, after losing thirty pounds of blood, 1131½ pounds.

We have stated that the polar bear preys on seals, fish, and the carcasses of whales; it also preys on birds, and their eggs, and not unfrequently destroys young whales and walruses: it is also said to disinter human bodies, and devour them with great greediness. Occasionally they break into the huts of the Greenlanders, attracted by the smell of seal's flesh, on which these people almost exclusively subsist. Yet we are credibly informed, that, when their ac-

customed food is to be obtained in sufficient quantity, they neither show much disposition to attack men, nor cattle, however accessible these may be.

In the morse or walrus, this bear has an enemy of great power and fierceness, with which he has at times dreadful combats, most generally terminating in the defeat of the bear, as the walrus is armed with long tusks, capable of giving deadly wounds. The whale is also a perpetual enemy of the polar bear, chasing him from the waters it frequents, and killing him by blows with its tail. Notwithstanding, the bear succeeds in catching and feasting on many of the young whales.

The dwelling place of the polar bear on shore, is by no means well ascertained, but is most probably in caves, or in some well concealed situation; it has been stated, that they reside, during winter, in excavations made in the permanent ice,—but Fabricius, from personal observation, declares the statement to be incorrect. Certainly this animal does not often go to any great distance from the sea, on which he is almost exclusively dependent for food. Hence the flesh of the polar bear is generally fishy and rank, though it is said to be whitish, and similar to mutton. Captain Cook's people always preferred it to the flesh of the walrus or morse, yet they never considered it a very desirable food, except when none other was to be obtained. The fat resembles tallow, becoming as clear as whale-oil after liquefaction, and free from disagreeable smell; the oil obtained from the feet has been used medicinally, but except in fineness, has no qualities which the oil of other parts does not possess.

One of the most singular facts relative to the polar bear is, that its liver is to a great degree poisonous, a circumstance unknown in almost every other animal. Three of BARENTZ's sailors were very much injured by eating of it; and Capt. Ross, in his late Arctic voyage, verified the observation by experiment. The principle, which imparts this noxious quality to the liver, is as yet undiscovered; we know of no article of diet used by the animal, to which it can be attributed, and even if we did, this would not account for the deleteriousness of the liver, while all other parts of the body remain free from any injurious property.

The skin of the polar bear, dressed with the hair on, forms very substantial mats for carriages, or hall floors. The Greenlanders sometimes take it off without ripping up, and inverting the skin, form a very warm sack, which serves the purpose of a bed, the person getting into it in order to sleep comfortably. It cannot well be dressed at any other than the winter season, on account of its great greasiness when freshly removed from the animal. The nations residing in the vicinity of Hudson's Bay dress it in the following manner: they first stretch it out on a smooth patch of snow, and stake it down, where it soon becomes stiffly frozen. While in this condition the women scrape off all the fat till they come to the very roots of the hair. It is occasionally permitted to remain in that situation for a considerable time, and when taken up it is suspended in the open air. When the frost is very intense, it dries most perfectly; with a little more scraping it becomes entirely dry and supple, both skin and hair being beautifully white. Not-

withstanding that this bear is so large and powerful, his skin is both light and spongy.

The time of the year at which the sexes seek each other is not positively known, but it is most probably in the month of July, or of August. HEARNE, who is an excellent authority, relates that he has seen them killed during this season, when the males exhibited an extreme degree of attachment to their companions. After a female was killed, the male placed his fore paws over her, and allowed himself to be shot rather than relinquish her dead body.

The pregnant females during winter seek shelter near the skirt of the woods, were they excavate dens in the deepest snow-drifts, and remain there in a state of torpid inaction, without food, from the latter part of December or January till about the end of March; then they relinquish their dens to seek food on the sea shore, accompanied by their cubs, which are usually two in number. The size of the cubs is very small; when they first leave the cave with the mother they are not larger than rabbits; yet we have seen that the weight of the full-grown animal sometimes exceeds a thousand pounds. HEARNE states that he has seen them not larger than a white fox, and their foot-prints on the snow not larger than a crown piece, when the impression of their dam's foot measured upwards of fourteen inches long by nine in breadth. This length and breadth appear excessive, and were probably rather more than the actual size of the foot itself, as the impression of the hair projecting over the feet would give an appearance in the snow which might lead to an incorrect notion of the size of the animal.

The enterprising observer above mentioned is of opinion that these animals breed when very young, or at least when half grown, as he has killed young females "not larger than a London calf," having milk in their teats; "whereas one of the full-grown ones are heavier than the largest of our common oxen. Indeed, I was once at the killing of one, when one of its hind feet, being cut off at the ancle, weighed fifty-four pounds."

The female polar bear is as rugged in her appearance, and as savagely ferocious in disposition, as her mate; yet to her offspring she displays a tenderness of affection which strongly contrasts with her fierce and sanguinary temper. When her cubs are exposed, danger has no existence to her, and nothing but death can compel her to desist from struggling desperately to defend or save them. The death of her offspring is with great difficulty acknowledged by the parent; when they are shot by her side the poor beast solicits their attention by every fond artifice, and endeavours to awaken them from their unnatural sleep: she offers them food, licks their wounds, caresses and moans over them in such a manner as to evince a degree of feeling which could scarcely be anticipated from so rude and terrible a quadruped.

Numerous instances of this fondness of attachment have been observed, and some of them attended with most singular displays of sagacity on the part of the mother. The following circumstance is related in Scoresby's account of the Arctic Regions, and is entitled to the fullest credence, because coming from so competent and excellent an observer:

"A she-bear, with her two cubs, were pursued on the ice by some of the men, and were so closely approached, as to alarm the mother for the safety of her offspring. Finding that they could not advance with the desired speed, she used various artifices to urge them forward, but without success. Determined to save them, if possible, she ran to one of the cubs, placed her nose under it, and threw it forward as far as possible; then going to the other, she performed the same action, and repeated it frequently, until she had thus conveyed them to a considerable distance. The young bears seemed perfectly conscious of their mother's intention, for as soon as they recovered their feet, after being thrown forward, they immediately ran on in the proper direction, and when the mother came up to renew the effort, the little rogues uniformly placed themselves across her path, that they might receive the full advantage of the force exerted for their safety."

The most affecting instance on record of the maternal affection exhibited by this bear, is related in one of the Polar Voyages; it conveys so excellent an idea of this creature's strong feeling of parental love, that we should deem the history of the animal imperfect, were such an illustration omitted.

"Early in the morning, the man at the mast-head gave notice that three bears were making their way very fast over the ice, and directing their course towards the ship. They had probably been invited by the blubber of a sea-horse, which the men had set on fire, and which was burning on the ice at the time of their approach. They proved to be a she-bear and her two cubs; but the cubs were nearly as large as the dam. They ran eagerly to the fire, and

drew out from the flames part of the flesh of the sea-horse, which remained unconsumed, and ate it voraciously. The crew from the ship threw great pieces of the flesh, which they had still left, upon the ice, which the old bear carried away singly, laid every piece before her cubs, and dividing them, gave each a share, reserving but a small portion to herself. As she was carrying away the last piece, they levelled their muskets at the cubs, and shot them both dead; and in her retreat, they wounded the dam, but not mortally.

"It would have drawn tears of pity from any but unfeeling minds, to have marked the affectionate concern manifested by this poor beast, in the last moments of her expiring young. Though she was sorely wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had fetched away, as she had done the others before, tore it in pieces, and laid it down before them; and when she saw they refused to eat, she laid her paws first upon one, and then upon the other, and endeavoured to raise them up. All this while it was piteous to hear her moan. When she found she could not stir them, she went off; and when at some distance, looked back and moaned; and that not availing to entice them away, she returned, and smelling around them, began to lick their wounds. She went off a second time, as before; and having crawled a few paces looked again behind her, and for some time stood moaning. But still her cubs not rising to follow her, she returned to them again, and with signs of inexpressible fondness, went round first one and then the other, pawing them, and moaning. Finding at last that they were cold and lifeless,

she raised her head towards the ship, and growled her resentment at the murderers; which they returned with a volley of musket balls. She fell between her cubs, and died licking their wounds."

The sagacity of the polar bear is well known to the whale fishers, who often find all their ingenuity insufficient to entrap him, as the following instance may serve to show. A noose, baited with a piece of "*kreng*," or whale carcass, was placed at a proper distance from the ship, which soon attracted the attention of a large bear. In attempting to secure the bait, the animal by some movement drew the noose, so as to catch him by one of his fore-paws. Apparently unconcerned by this circumstance, and conscious of knowing how to free himself from restraint, he quietly loosened the slip-knot with the other paw, and leisurely walked off to enjoy his morsel. The trap was again baited, and the bear once more approached to obtain his favourite food, but, grown wise by experience, he carefully avoided the rope, and carried off the bait, to the mortification of the captain, who wished to obtain his skin. The whaler, resolved to baffle the address of the bear, re-arranged his noose once more, carefully burying the rope at a considerable depth in the snow: but his precautions were unavailing; the bear cautiously examined the vicinity, scented the ground with attention, detected the situation of the rope, dug it up and threw it out of his way; then securing his prize, he once more triumphantly withdrew to enjoy it.*

* See Scoresby's Arctic Regions, vol. i. whence several of these anecdotes are sketched.

Captain Scoresby shot a she-bear and took her two cubs alive, as they did not offer to leave the body of their mother, and he kept them on board of his ship, until they were tame enough to be allowed to go about the deck. On one occasion a cub, tied by the neck with a long rope, was allowed to go out of the ship, when he immediately swam to the ice, and as soon as he attained it, made a violent effort to break the rope by running at full speed until he put the rope as suddenly on the stretch as possible. Failing in his first attempt, he went back far enough to slacken the cord, and again renewed his race, in order, if possible, to break it. Convinced by these experiments, that it was a hopeless attempt, he lay down, sullenly growling his vexation. Another artifice resorted to by this animal was still more singular; passing a chasm or fissure in the ice, about eighteen inches or two feet wide, and three or four feet deep, the slack (or bight) of his rope dropped into it; young Bruin returned, and going down head foremost into the chasm, he hung by the edges, holding on with one hind-foot on each side of it, and tried with both his fore-paws to loosen the rope and slip it off his head, as if he was aware that in this position he would be assisted by the weight of the portion which had dropped lower into the cavity.

The polar bear, like the other species of this genus, is able to live exclusively on vegetable food, as has been repeatedly proved by experiment on those brought to Europe. One which was exhibited in France, ate six pounds of bread a-day, and was altogether fed with this substance. It appears that the carnivorous habits of this animal, are greatly de-

pendent on the circumstances of its situation, for being placed where vegetation is exceedingly scanty, if it even exists at all, and surrounded by seals, fish, &c. there can be no choice; notwithstanding, the animal is provided by nature with proper organs for the mastication and digestion of vegetable food.

The polar bear in captivity seems to suffer much from heat, which renders his confinement very uncomfortable, as is expressed by his restlessness and roaring. This is in some degree quieted by repeatedly throwing buckets of cold water over his body, which is always grateful and refreshing.

As far north as navigators have yet advanced, polar bears have been found, but their numbers evidently diminish where seals are scarce, while they are very numerous where seals are found in greatest abundance.—Near the east coast of Greenland they have been seen in large flocks, at a distance resembling sheep more than beasts of prey. On the shores of the Arctic Ocean, Spitzbergen, Greenland, and Nova Zembla, from the river Ob in Siberia, to the mouths of the Jenesei and Lena, and in the vicinity of Hudson's Bay, they are found in various degrees of abundance.

The polar bear is peculiarly distinguished from other species of this genus by the length of the body, compared with its height, by the length of the neck, the smallness of the external ears, and length of the soles of the feet; which, according to Cuvier, are one-sixth of the whole length of the animal. In the fineness and length of its pelage it also differs materially from the other species. The forehead and muzzle of the polar bear are nearly

on the same line, or flat; while in the European or brown bear, they are separated by a deep depression. In the black, or American bear, the profile is rather an arched line, and in the grizzly bear it is slightly convex between the eyes. The forehead of the polar bear is flat; the European bear has it rounded. The polar bear has the head narrow and the muzzle large; the brown bear has the head large and the muzzle narrow.*

---

* The following measurements of the polar bear are given by Capt. Lyon, in the excellent and interesting narrative of his Arctic Voyage in company with Captain Parry.

Length—From the snout to the insertion of the tail, 8 ft. 7½ in.—the head only 1 ft. 6 in.—from the eye to the ear, 10 in.—from the nose to the centre of the eye, 8 in.— of the ear alone, 4½ in.—the tail from root to tip, 5 in.—fore claws, 5½ in.—hinder claws, 1½ in.—canine teeth, 2½ in.

Girth—Round the body, 7 ft. 11 in.—neck, 3 ft. 4½ in.—fore leg, 2 ft. 3 in.—hind leg, 3 ft. 3 in.—round the snout, 1 ft. 9½ in.—round the forehead, 2 ft. 1 inch.

Breadth—Paws 10 in.—between the ears, 1 ft. 3 in.—canine teeth, 3 in.—[*Weight*, 1600 *lb.*]

Capt. Lyon, in consequence of having seen a polar bear prowling about during the coldest part of the year, infers that naturalists are mistaken in thinking that this animal becomes torpid during winter. We do not feel authorised to draw a similar conclusion from Capt. L.'s observation; especially as the habits of the *genus* in this respect are well known, and because the usual food of the polar bear must be extremely difficult to obtain, if it be at all accessible to the animal, during the severest part of the winter.

CHAPTER VIII.

Genus IX. Raccoon; *Procyon*, Storr. C.

Germ. Waschthier. *Fr.* Raton.

GENERIC CHARACTERS.

The head is short and triangular, having the nose to project beyond the lower jaw. The tongue is smooth; the eyes not large; the ears short and oval; the body short and rather slender. The teats are six in number, and situated on the belly. The feet are five-toed, and provided with large and strong nails: the soles of the (posterior) feet are naked, but the animal does not always place their whole length on the ground in walking. The tail is long and pointed, but not prehensile. The habits of the genus are given with the description of the species belonging to it.

Dental System.

40 Teeth:

20 Upper	6 Incisor	6 False Molar	
	2 Canine	2 Carnivorous	
	12 Molar.	4 Tuberculous.	
20 Lower	6 Incisor	8 False Molar	
	2 Canine	2 Carnivorous	
	12 Molar.	2 Tuberculous.	

In the upper jaw we find three incisors, the two central being smaller than the external, which is slightly separated from them, longer and more coni

cal. The canine tooth is more slender and trenchant than that of the dog. There are three false molars; the first touching the canine is rudimental, the second is regular, but smaller and more delicate than the third, and remarkable by the thickness of its base, and the rudiment of a tubercle. The carnivorous tooth, on its exterior surface, still presents the three characteristic divisions peculiar to this aspect of all carnivorous teeth in the upper jaw, but the internal and anterior tubercle has a considerable development, and a second tubercle arises behind this on the posterior edge, which changes it into a true tuberculous tooth. The tuberculous tooth which succeeds to the carnivorous, also presents on its external face two divisions, or the two tubercles which are observed in the analogous tooth of dogs; but like the carnivorous, it is thickened, and has on its interior (after the two external tubercles) three other tubercles placed on the same line, and separated from the first by a deep depression; in short, a fourth tubercle shows itself on the internal border of this tooth, at its posterior part, so as apparently to be a mere division of the third internal tubercle. The last upper tuberculous tooth, one-third smaller than the foregoing, and much smaller on its internal than on its external surface, seems to present the same number of tubercles, but those of the middle of the crown, instead of standing on the same lines, are placed in a triangle on account of the narrowing of the part they occupy.

In the lower jaw the incisors are all similar to each other, and the external closely approaches the canine tooth. The latter is long, inclining forwards, and slightly recurved at the point; its posterior face

being concave. The false molars are four in number; the first, placed at the base of the canine, is rudimental; the three others increase progressively to the last, which is thickened and extended at its posterior part. The carnivorous tooth, at its anterior part, is composed of three principal tubercles, disposed in triangles, and a small point is seen at the base of the first tubercle, and its posterior part is composed of two thick and blunt tubercles. The tuberculous tooth, nearly as large as the carnivorous, appears to be nothing but the latter reversed; that is, it has anteriorly two tubercles, one on its external and another on its internal edge, and posteriorly three tubercles disposed in a triangle.

In their reciprocal position, the relations of these teeth consist in the interlocking of their tubercles, with the intervals left between those of the other jaw.

Species I.—*The Raccoon.*

Procyon Lotor.—L.

Ursus Lotor; Lin. Erxl. Boud.
Vulpes Americana; Charleton.
Le Raton; Buff. Hist. Nat. 8, pl. 43.
Procyon Lotor; Cuv. Reg. An. p. 143. Sabine appx p. 647.
Coati Brasiliensium; Klein.
Mapach, etc. Mexicanorum.

There are few parts of the American continent in which the Raccoon has not, at some period, been

---

* The specific name "Lotor" was given by Linné. The removal of this species from the genus *Ursus*, by Storr, to form his *genus* Procyon, will not justify the appropriation of the *species* to the latter naturalist.

found native, from the borders of Nootka Sound to the forests of Mexico, and still more southern regions. Yet the Count de Buffon asserts, that this animal was originally from South America, and is most numerous in hot climates, without giving any fact on which his opinion is founded, or supporting his declaration by the observations of other naturalists. Sonnini properly observes, that neither Frezier, Ulloa, nor Molina, who have given descriptions of the animals of Peru, Brazil and Chili, make any mention of the raccoon; and, in his own long and numerous journeys in Guiana, he never found one among the great number of quadrupeds which hold undisturbed possession of the vast forests, by which that interesting region is overshadowed.

But the most positive proofs of their existence, in the northern parts of this continent, are to be found in the journals of the most respectable observers. By Dampier, they were seen near the southern point of California, in the 22° of N. latitude; Bartram found them on the isle of St. Simon, near the coast of Georgia, in 30° of N. latitude; and the celebrated Capt. Cook saw them in considerable numbers at Nootka and Prince William's Sound. Most probably, had this enterprising voyager landed still farther north, he would have discovered the raccoon there, as the natives of Prince William's Sound were in a great degree, clothed with skins of this animal.

Were we to form an opinion of this animal's character solely from external appearances, the mingled expression of sagacity and innocence exhibited in his aspect, his personal neatness and gentle move-

ments, might all incline us to believe that he possessed a guileless and placable disposition. But in this, as in most other cases, where judgments are formed without sufficient examination, we should be in error, and find, that to the capricious mischievousness of the monkey, the raccoon adds a blood-thirsty and vindictive spirit, peculiarly his own. In the wild state, this sanguinary appetite frequently leads to his own destruction, which his nocturnal habits might otherwise avert; but as he slaughters the tenants of the poultry-yard with indiscriminate ferocity, the vengeance of the plundered farmer speedily retaliates on him the death so liberally dealt among the feathered victims. This destructive propensity of the raccoon is more remarkable, when we observe that his teeth are not unsuited for eating fruits. When he destroys wild or domesticated birds, he puts to death a great number, without consuming any part of them, except the head, or the blood which is sucked from the neck.

Being peculiarly fond of sweet substances, the raccoon is occasionally very destructive to plantations of sugar-cane,* and of Indian corn. While the ear of the Indian corn is still young, soft and tender, or "in the milk," it is very sweet, and is then eagerly sought by the raccoons; troops of them frequently enter fields of maize, and in one night commit extensive depredations, both by the quantity of grain they consume, and from the number of stalks they break down by their weight.

* Sir Hans Sloane: Natural History of Jamaica.

The raccoon is an excellent climber, and his strong sharp claws effectually secure him from being shaken off the branches of trees. In fact, so tenaciously does this animal hold to any surface upon which it can make an impression with its claws, that it requires a considerable exertion of a man's strength to drag him off; and as long as even a single foot remains attached, he continues to cling with great force. I have had frequent occasion to pull a raccoon from the top of a board-fence, where there was no projection which he could seize by; yet, such was the power and obstinacy with which the points of his claws were stuck into the board, as repeatedly to oblige me to desist for fear of tearing his skin, or otherwise doing him injury by the violence necessary to detach his hold.

The conical form of the head, and the very pointed and flexible character of the muzzle or snout, are of great importance in aiding the raccoon to examine every vacuity and crevice to which he gains access; nor does he neglect any opportunity of using his natural advantages, but explores every nook and cranny, with the most persevering diligence and attention, greedily feeding on spiders, worms, or other insects which are discovered by the scrutiny. Where the opening is too small to give admittance to his nose, he employs his fore-paws, and shifts his position or turns his paws sidewise, in order to facilitate their introduction and effect his purpose. This disposition to feed on the grubs or larvæ of insects must render this animal of considerable utility in forest lands, in consequence of the great numbers of injurious and destructive insects he consumes. He is also said to

catch frogs with considerable address, by slily creeping up, and then springing on them, so as to grasp them with both paws.

The circumstance which has procured for the raccoon the specific name of "LOTOR," or the WASHER, is very remarkable and interesting: this is, the habit of plunging its food into water, as if for the purpose of soaking or cleansing it. To account for this disposition, some naturalists have supposed that the raccoon is not as liberally supplied with salivary organs as other animals, and is therefore obliged to prepare its food by softening it in water. The raccoon, however, does not invariably wait to subject his food to this preparation, but frequently devours it in the condition he receives it, although it may be nothing but dry bread, and clean water be within a few steps of where he stands.

Water seems to be essential to their comfort, if not of absolute necessity for the preparation of their food. I have had for some time, and at the moment of writing this have yet, a male and female raccoon in the yard. Their greatest delight appears to be dabbling in water, of which a large tub is always kept nearly full for their use. They are frequently seen sitting on the edge of this tub, very busily engaged in playing with a piece of broken china, glass, or a small cake of ice. When they have any substance which sinks, they both paddle with their fore-feet with great eagerness, until it is caught, and then it is held by one, with both paws, and rubbed between them: or a struggle ensues for the possession of it, and when it is dropped

the same sport is renewed. The coldest weather in winter does not in the least deter them from thus dabbling in the water for amusement; nor has this action much reference to their feeding, as it is performed at any time, even directly after feeding till satiated. I have frequently broken the ice on the surface of their tub, late at night, in the very coldest winter weather, and they have both left their sleeping place with much alacrity, to stand paddling the fragments of ice about, with their fore-legs in the water nearly up to the breast. Indeed, these animals have never evinced the slightest dislike to cold, or suffered in any degree therefrom; they have in all weathers slept in a flour barrel thrown on its side, with one end entirely open, and without any material of which to make a bed. They show no repugnance to being sprinkled or dashed with water, and voluntarily remain exposed to the rain or snow, which wets them thoroughly, notwithstanding their long hair, which being almost erect, is not well suited to turn the rain. These raccoons are very fond of each other, and express the greatest delight on meeting after having been separated for a short time, by various movements, and by hugging and rolling one another about on the ground.

My raccoons are, at the time of writing this, more than a year old, and have been in captivity for six or eight months. They are very frolicsome and amusing, and show no disposition to bite or injure any one, except when accidentally trodden on. They are equally free from any disposition to injure children, as has been observed of other individuals. We fre-

quently turn them loose in the parlour and they appear to be highly delighted, romping with each other and the children, without doing any injury even to the youngest. Their alleged disposition to hurt children especially, may probably be fairly explained by the fact above mentioned, that they always attempt to bite when suddenly hurt, and few children touch animals without pinching or hurting them. They exhibit this spirit of retaliation, not only to man, but when they accidentally hurt themselves against an inanimate body; I have many times been amused to observe the expression of spite with which one of them has sprung at and bit the leg of a chair or table, after knocking himself against it so as to hurt some part of his body.

These animals may be tamed while young, but as they grow to maturity most generally become fierce and even dangerous. I have had one so tame as to follow a servant about through the house or streets, though entirely at liberty; this was quite young when obtained, and grew so fond of human society as to complain very loudly, by a sort of chirping or whining noise, when left alone. Nothing can possibly exceed the domesticated raccoon in restless and mischievous curiosity, if suffered to go about the house. Every chink is ransacked, every article of furniture explored, and the neglect of servants to secure closet doors, is sure to be followed by extensive mischief, the evil being almost uniformly augmented by the alarm caused to the author of it, whose ill directed efforts to escape from supposed peril, increase at the same time the noise and the destruction.

To complete the history of the raccoon in a state

of captivity, we shall insert here the greater part of a letter written by Mr. BLANQUART DE SALINES to Count de BUFFON, on the correctness of which full reliance may be placed.

"My raccoon was always kept chained before he came into my possession, and in this captivity he seemed sufficiently gentle, though not caressing; all the inmates of the house paid him the same attention, but he received them differently; treatment he would submit to from one person, invariably offended him when offered by another. When his chain was occasionally broken, liberty rendered him insolent; he took possession of his apartment, suffering no one to approach him, and was, with difficulty, again confined. During his stay with me, his confinement was frequently suspended; without losing sight of him, I allowed him to walk about with his chain on, and he expressed his gratitude by various movements. It was otherwise when he escaped by his own efforts: he would then ramble for three or four days together over the neighbouring roofs, and only descend at night into the yards, enter the hen-roosts and destroy the poultry, especially the Guinea-fowls, eating nothing but their heads. His chain did not render him less sanguinary, though it made him more circumspect; he then employed stratagem, allowing the poultry to familiarize themselves with him by partaking of his food, nor was it until he had induced them to feel in perfect security that he would seize a fowl and tear it to pieces: he also killed kittens in the same manner.

"If the raccoon be not very grateful for favours received, he is singularly sensible of bad treatment;

a servant one day struck him some blows with a stick, and often afterwards vainly endeavoured to conciliate him, by offering eggs and shrimps, of which the animal was very fond. At the approach of this servant he became enraged, and with sparkling eyes would spring towards him, making violent outcries: under such circumstances he would accept of nothing until his enemy had withdrawn. The voice of the raccoon, when enraged, is very singular, sometimes resembling the whistling of a curlew, and at others the hoarse barking of an old dog. When struck by any one, or attacked by an animal stronger than himself, he offered no resistance; like the hedgehog, he hid his head and paws, by rolling his body in form of a ball, and would have suffered death in that position. I have observed that he never left hay nor straw in his bed, preferring to sleep on the boards; when litter was given, he threw it away immediately. He did not seem very sensible to cold, and passed two out of three winters exposed to all the rigours of the season, and did well, notwithstanding he was frequently covered with snow. I do not think he was solicitous to receive warmth; during some frosts I gave him separately warm water and water almost frozen, to soak his food in, and he always preferred the latter. He was at liberty to sleep in the stable, but often preferred passing the night in the open yard."

Captivity and domestication produce great changes in the habits of this animal, as he learns to spend nearly the whole of the daytime in active exercise, and sleeps during the greater part of the night.—When inclined to sleep, the raccoon forms itself into

a sort of ball, by sitting on its hind legs and doubling the head under the body, so as to apply the forehead to the ground; the tail is then brought forward so as to conceal the feet and face on one side, and the true figure of the animal is no longer discernible. In this position the raccoon sleeps profoundly, and is not startled readily, nor by slight sounds.

The size of the raccoon varies with the age and sex of the individual. A full grown male may be stated to have the body a foot, or a few inches more, in length; the highest part of the back is about a foot from the ground, while the highest part of the shoulder is ten inches. The head is about five, and the tail rather more than eight inches long. The female is larger than the male in every respect, at least such is the fact in relation to the raccoons now in my possession, which, however, have not yet attained their full growth. They are of the same age, and the female is strongly distinguished from the male by the black markings on all parts of the body being more purely black, and the fur and hair longer, thicker, and more glossy than that of the male; these peculiarities, in addition to her greater size, uniformly lead strangers to suppose this individual to be the male, instead of the female. The pelage of the male is not only less purely black at the extremities of the hairs, but there is a much greater intermixture of fawn-coloured hair than in the female, giving more of a rusty appearance to the whole surface of his body. A young raccoon of thirty days old is about the size of a common cat of a year old, though the greater length of its legs, and the bushiness of its pelage, make it at first sight appear much larger.

The general colour of the body is a blackish gray, which is paler on the under part of the body, and has over considerable part of the neck, back and sides, some fawn or light rust-coloured hair intermixed. The general gray colour is owing to the manner in which the hairs are alternately ringed with black and dingy white. The tail is very thickly covered with hair, and is marked by five or six black rings around it, on a yellowish white ground.

The head, which is about five inches long, is very triangular, and from its pointed snout reminds us of the aspect of the fox: the snout terminates in a smooth and shining black membrane, through which the nostrils open, having the slit to rise slightly at the sides. The nose is prolonged considerably beyond the upper jaw, and this, together with its great flexibility, gives the animal great advantages in exploring little crevices and crannies for insects, &c. The pupils of the eyes are round; the ears are oval, or rather elliptic, and of a yellowish white colour on their extremities and anterior edges. The face is whitish in front, but there is a black patch surrounding the eye, that descends entirely to the lower jaw, over the posterior part of which it is diffused, and a black line running from the top of the head down the middle of the face, ending below the eyes. The rest of the hair between the eyes, the ears, and eyebrows, is almost entirely white, and directed downwards. The hair on the muzzle is usually very short; on the feet also, and on one half of the legs; the short hair of the feet and legs is of a dirty whitish colour. The whiskers on the upper lip are long and strong.

All the feet have five toes each, terminated by strong curved and pointed claws; and each foot is furnished with five thick and very elastic tubercles beneath. The first toe or thumb of the fore-foot is the shortest of all; the little or external finger is next in length, and then the fore-finger: the remaining two are equal. The first tubercle, which is a very strong one, is situated near the wrist; the second is at the base of the little finger; the third at the root of the inner finger or thumb; the fourth opposite the second digit, and the fifth opposite the two longest. The hind feet are throughout similar, except that the first tubercle is farther distant from the heel.

The raccoon has a gland on each side of the anus, which secretes a strong scented fluid; but this does not impart an unpleasant smell to the animal. Its liver has five lobes, and is provided with a large gall-bladder; the bowels have no cœcum, and the stomach, which is situated entirely on the left side, is elongated and small, compared with the size of the animal.

The pelage of the raccoon is subject to considerable variations of colour at different periods of life, and in different individuals. The rings on the tail and the patches around the eyes are, however, uniform and constant. The tail of the raccoon is not affected by the coldest weather; hence this quadruped is never known to gnaw his tail, as has been observed of animals closely allied to it in configuration and habits.*

---

*This is especially the case with the *coati* or coatamundi of South America, and it has been considered very wonder-

The fur of the raccoon forms an article of considerable value in commerce, as it is largely employed in the fabrication of hats. Vast numbers of raccoon skins are collected by the different fur companies; and we occasionally see in our furrier shops, skins which must have belonged to individuals of much larger size than those from which the measurements have been hitherto taken.

Raccoons are found throughout the whole of North America, and they still continue to be numerous in many of the well peopled parts of the United States. Occasionally their numbers are so much increased as to render them very troublesome to the farmers in the low and wooded parts of Maryland, bordering on the Chesapeake Bay. Their season of sexual intercourse begins in the first week of March: the female usually produces two or three cubs at a litter; her den is then made in some hollow tree or very secure situation.*

---

ful that the animal should *eat its own tail*, which certainly *appears* to be the fact. The extreme length of its tail, in which the blood circulates but feebly, exposes it to the influence of the cold or frost; and the exceedingly tormenting irritation produced thereby, leads the animal to gnaw and scratch the tail to relieve the excessive itching. The disease spreads, and the anguish induces the coatamundi to gnaw more furiously, and eventually his life is destroyed by the extension of the inflammation and irritation to the spine, &c.

* Os peni inest, leviter versus glandem curvatum; testiculi et caput penis, tempore amoris incipiente, notabiliora pendentioraque deveniunt. Fœminam contra terram vel aliquod durum, frequentissime genitalia fricare notavi; profecto et marem aliquando, simili modo, sese diligenter agitare vidi.

CHAPTER IX.

Genus X. Badger; *Meles*, Briss.

Gr. Μέλις.	*Fr.* Blaireau.
Lat. Taxus, Meles.	*Sp.* Tassugo, Texon.
Ital. Tasso.	*Ger.* Tachs, Dachs, Dar.
Swed. Graf-Svin.	*Scot.* Brock, Tod, Pate, &c.

GENERIC CHARACTERS.

The head is conical and the muzzle elongated; the ears are rounded and the eyes small. The body is robust and the limbs comparatively short, the digits being all covered by the integuments, as far as to the roots of the claws, which on the fore-feet are long, and admirably adapted for burrowing. The teats are six in number, two of them are placed on the lower part of the chest, two on the belly, and

---

* Desmarest has incorrectly quoted Linné as having appropriated the name "*Taxus*" to this genus. In this, as in almost every other inaccuracy, the French naturalist has been servilely copied in this country.

Linné made *Taxus* a species of his genus *Ursus*, [see ed. 6, genus 10, sp. 1.] and it occupies a place in the same genus in Gmelin's edition of the Systema Naturæ, p. 102, vol. i. The term *Taxus* is preoccupied in Botany; we have adopted the name given to this genus by Brisson, which has the advantage of being the same as that used by Varro and other Latin writers for the only species of badger then known. This name of the genus, in some of the books, is inaccurately attributed to Storr: [See *Ranzani*, Elem. di Zoologia, ii. p. 249.]

TRANSACTIONS OF THE AMERICAN PHILOSOPHICAL SOCIETY

1

2

Drawn by C.A.Lesueur.

Engd by C.B.Ellis

1 Raccoon 2 American Badger.

two in the groin. The most remarkable character which distinguishes this genus, is a pouch situated beneath the tail, whence an unctuous and fetid substance is discharged.

Dental System.

36 Teeth:
- 16 Upper: 6 Incisive; 8 Canine; 8 Molar. — 4 False Molars; 2 Carnivorous; 2 Tuberculous.
- 20 Lower: 6 Incisive; 2 Canine; 12 Molar. — 8 False Molars; 2 Carnivorous; 2 Tuberculous.

The dental system of the badger is very analogous to that belonging to the genus *mephitis*, or skunk, hereafter to be described; differing from it, however, by some modifications of the carnivorous and superior tuberculous teeth.

In the upper jaw the incisors and canine teeth are similar to those of the martens, which we shall treat of in another part of this work. The false molars have the regular forms of such teeth. The carnivorous tooth, (remarkable by its small size, owing to the diminution of its posterior part, which gives it, when externally viewed the appearance of a false molar,) is composed at the internal part of a base furnished with three small tubercles separated by a perceptible depression. The tuberculous tooth is disproportionately large, and is as broad as it is long; having on its external edge three tubercles, on its internal edge a serrated crest, and on its middle another crest, separated into two principal parts by a slight groove.

In the lower jaw the incisors and canine teeth offer nothing remarkable. Of the four false molars,

the first is rudimental and has but one root, the three others have the regular forms of such teeth. The carnivorous, at its anterior part, is composed of three tubercles, (as in the skunk and others,) but its posterior part, besides two tubercles, has a spur terminating in a serrated crest. The tuberculous is a small rounded tooth marked on its surface by some irregular projections and depressions.

In their reciprocal position, the principal character consists, as we have seen, in the lower carnivorous and upper tuberculous teeth; thus the relations existing between these teeth are more extended. The two first tubercles of the superior carnivorous are in relation with the posterior edge of the opposite carnivorous; (this is the carnivorous portion of this dental system;) the extremity of the first of these two tubercles fills the hollow separating the three small tubercles of the enlarged base, which belongs to the inner face of the upper carnivorous. The whole remainder of the inferior carnivorous is opposed to two-thirds of the superior tuberculous tooth. The last third corresponds with the lower tuberculous tooth.

From this dental system it is evident that the badger is an animal partly frugivorous, and the arrangement for triturating vegetable substances much exceeds that for the mastication of flesh.

Species I.—*American Badger.*

Meles Labradoria.—Sabine.

Ursus Labradorius: L. Gmel.
Carcajou: Buff. Sup. 3, p. 49.
Braro: Lewis and Clark, vol. ii. p. 177.
Meles Labradoria: Sabine, App. to Franklin's Journey, p. 649.

The American Badger has been for a long time known to naturalists, though it is but recently established as a species distinct from the badger of Europe. By some of the European naturalists and compilers, our badger has been considered as a mere variety of the European species, while by others it has been regarded as entirely the same; the fact was never fairly decided, until the publication of Sabine's Appendix above cited. Say had, however, arrived at the same conclusion, and applied nearly the same name to it in the the journal of Long's Expedition to the Rocky Mountains, previous to the appearance of Sabine's observations.

"Schreber was the first author who considered the American to be a distinct species, and Gmelin adopted this conclusion in his edition of Linné, though he was led to give the incorrect specific character of "palmis tetradactylis," in consequence of Buffon's statement, that the carcajou had but four toes on its anterior feet."*

Nature has destined this animal to a subterraneous and solitary mode of life, which, together with its timid disposition and nocturnal habits, throw great

* Sabine.

difficulties in our way while endeavouring to ascertain its peculiarities. It is entirely inoffensive, and apparently feeble, but if denied the advantages of swiftness of motion or great size, it has not been left entirely destitute of the means of providing for its own safety. The long claws on its fore feet are admirably adapted for removing the earth, and the celerity with which it can escape from danger, by burrowing, is really surprising. It is altogether fruitless to attempt to secure the animal by digging after it, as its progress is too rapid, and the depth to which it descends too great. It is only by artifice that the badger can be brought from its retreat; this is effected by the aid of dogs, smoke, &c. and when driven to the last extremity, the strength of its jaws and the sharpness of its teeth, enables the animal to inflict the severest injury on its persecutors. The body of the badger is thick and heavy, and its movements on the ground slow and creeping; there is little appearance of vivacity or intelligence in its aspect, yet it does not exhibit any appearance of dulness or stupidity. It is in fact endowed with exactly the degree of understanding which is suited to its peculiar condition: having the proper instruments for securing itself from ordinary enemies, as well as strength and courage enough to defend itself when pressed, but little sagacity is necessary to enable it to obtain the requisite food, or to continue its kind. Neither should we indulge in reflections similar to those found in many books of natural history, and believe that the life of this animal is gloomy or wretched. To men it may appear gloomy or dreadful to live

under ground, or to steal forth under cover of the night in search of food; but this is the only mode of life the badger is susceptible of enjoying, and the only kind of action he is capable of.

The burrows of the badger are deep and extensive, and several individuals have been found inhabiting one excavation. Within his subterraneous retreat he passes the day in sleep, and it is not until night veils all objects in shade that he comes forth to seek his subsistence. Then, fruits of different sorts, frogs, insects, and most probably any small animals to be procured, constitute his food.

The badger has its young in summer, and generally two, three, or four, at a litter, which are occasionally brought out to the mouth of the burrow to enjoy the sunshine. The young become capable of procreating when two years old, and the period of their lives is extended to ten, twelve, or fifteen years. If taken when young, the badger is easily tamed, soon becoming quite familiar and obedient.

The American badger is a pretty little animal, and its aspect is not unlike that of some small pug-faced dogs. It is found most frequently on the plains adjacent to the Missouri and its tributaries, as well as on those near the Columbia river. It is not uniformly found in the open country; Lewis and Clark sometimes observed them in the woods.

This animal is about two feet five inches long, including the tail, which measures three inches, and its body appears long in proportion to its thickness. The fore and hind legs are short, but remarkably muscular, the fore paws are provided with the long claws peculiar to this genus, which gives them the

means of burying themselves with great celerity even in a hard soil. The neck is short and the mouth wide; the eyes are black and small; the ears short, wide, and appearing as if a portion had been cut off them. The whiskers are arranged in four points on each side near the nose, and on the jaws close to the opening of the mouth. The hairs are much shorter on the sides and rump than on other parts of the body, which imparts an appearance of flatness, especially when the badger rests upon its belly.—The length of the hair is upwards of three inches, especially upon the rump, whence it extends so far towards the extremity of the tail as to conceal it entirely, and gives to the whole of the posterior parts of the body, "the appearance of a right angled triangle, of which the tail forms an acute angle." Intermixed with the hair we find a small quantity of coarse pale reddish yellow fur.

The American badger differs from the European by generally being smaller and more slenderly formed; its head is full as long, but not so pointed towards the nose; neither is the profile at all similar to the badger of Europe. In the European animal, the outline drawn from the forehead to the nose is quite straight, while in the American there is a considerable depression on a line with the eyes.

There is also a very striking difference between the markings of these animals. In the American badger there is a narrow white line running from between the eyes towards the back; the remainder of the superior part of the head is brown, the under jaw and whole of the throat are white. A semi-circular brown spot is seen between the ears and the

light coloured part of the cheeks. Above the eyes the white marking extends triangularly for a short distance, and below it runs in a line with the eyes towards the fore part of the mouth; yet the whole eye is within the dark colour of the upper part of the head, and this colour runs at the corner of the eye, with an acute angle, into the white.

The badger of Europe has three broad white marks, one on each side and one on the top of the head, between which there are two broad black lines, including the eyes and ears. All the parts under the throat and jaw are black. The hairs on the upper part of the body and sides of the American badger are fine, long and grayish; in the European the hairs on the same parts are darker, longer, and coarser. In the American, the under are lighter than the upper parts; in the European they are darker. In our animal the legs are of a dark brown; in the European quite black.* Notwithstanding the European badger is generally the largest, its dark coloured nails are smaller than those of the American, which are of a light horn colour. The tail of the American badger is shorter than that of the European.*

The American badger weighs from fourteen to eighteen pounds.

---

* For the details of difference in the markings of the two species, we are indebted to Capt. Sabine's Appendix, above quoted. We have no specimen of the European badger in the collection of the Philadelphia Museum.

CHAPTER X.

Genus XI. Glutton; *Gulo*. Storr.

Ger. Vielfrass; Rosomak. *Russ.* Rosamaka; Rosamak.
Fr. Glouton. *Swed.* Järff; Filfras; Snop.

Generic Characters.

The head is but moderately elongated, and the body is long in proportion to its distance from the ground. The ears are very short and rounded; the tail is intermediate in length to the tails of the badger and raccoon. There is a simple fold of the integument below the tail, instead of the pouch observed in the badger, to which animal the movements of those belonging to the present genus bear some resemblance. The feet are five-toed, the toes being distinctly separated and armed with hooked claws. The soles of the (posterior) feet are capable of being applied either wholly or partially to the ground.

Dental System.

36 or 38 Teeth:	16 or 18 Upper	6 Incisive	2 Canine	6 or 8 False Molars
				2 Carnivorous
		6 or 10 Molar.		2 Tuberculous.
	18 or 20 Lower	6 Incisive	2 Canine	6 or 8 False Molars
				2 Carnivorous
		10 or 12 Molar.		2 Tuberculous.

The dental system of this genus offers nothing peculiar in the different sorts of teeth to distinguish them from those hereafter to be described as proper

1 Wolverene. 2 Fisher.

to the mustelæ or martens, between which and this genus there is a very close affinity. This genus may be considered as intermediate to the true plantigrade and digitigrade animals.

Species I.—*The Wolverene.*

Gulo Luscus. L.*

Gulo Luscus: Sab. app. p. 650.
Ursus Gulo: Pal. Spicil. 14, 125, pl. 2. Schreb. pl. 144.
Glouton: Buff. Sup. 3. pl. 48.
Meles Gulo: Bod. Elench. Anim. p. 80, sp. 5.
Ursus Luscus: L. Gmel.
Ursus Freti Hudsoni: Briss. quad. 188.
Quickhatch, or *Wolverene:* Edw. av. 2. p. 103. pl. 108.
Wolverene; Penn. quad. p. 195, no. 140, pl. 20, fig. 2.
Gulo Arcticus: Desm. Mammal. p. 174.
Quickhatch: Catesby's Carolina, app. xxx.
Carcajou: [so called by the Canadians.]

The Wolverene has served as a fruitful theme for exaggeration and fiction, which has continued the longer in proportion to the remoteness of the animal, and the difficulty of ascertaining its real manners. It is true that ferocity and destructiveness are among its most striking characteristics, and it is known to feed ravenously and fully when it has secured its prey, yet in none of these respects is the wolverene different from numerous other animals, nor is it at

---

* The specific name of "*Luscus*" was bestowed on this species by Linné, who arranged it in his genus *Ursus*, in consequence of its plantigrade character. Though it is now removed to Storr's genus *Gulo*, we believe it improper to withdraw the credit of the specific title from Linné since, notwithstanding the change stated, his specific name must always be continued.

all the prodigy that book-makers have heretofore represented it to be.

The wolverene inhabits the northern parts of America generally, quite to the Arctic Sea, and it is probable that its visits extend beyond the continent towards the Pole, as a skull of this animal was found on Melville Island by Capt. Parry. It is an inhabitant alike of the woods and barren grounds, and is capable of enduring the severest cold. The motions of the wolverene are necessarily slow, and its gait heavy, but the acuteness of its sight and power of smelling are an ample compensation; as they are seldom or never killed without being found fat, there is good reason for believing that they rarely suffer much from hunger. This animal is surprisingly strong, and an overmatch for any quadruped near its own size;—indeed its sharp claws and teeth enable it to offer a very effectual resistance even to the bear.

The strength of the wolverene, joined to its great gust for animal food, causes much trouble to hunters and travellers who attempt to secure provisions by burying them in the snow, or protect them by coverings of boughs and trunks of trees. It is almost impossible to prevent this creature from finding access to such places of deposit either by strength or stratagem, and destroying the stock on which the voyager may have counted for his future subsistence and safety. To the hunters the wolverene is also very injurious, by robbing their traps of the animals which are taken in them, before the arrival of the owners. The wolverene is fierce and dauntless, and has been seen to take away from

the wolf the carcass of a deer, and when itself engaged in feeding, has refused to move though warned of the approach of an armed hunter, who shot it while standing as if prepared to maintain its prize.

It is stated in all the books of natural history, that this animal is in the habit of ascending trees for the purpose of leaping down upon the necks of rein-deer and other similar animals; and that it has sagacity enough to carry with it into the top of the tree some of the moss of which the deer are fondest, and drop this immediately under it, so as to secure the intended victim, by placing it in the most favourable position for being leaped on. When the deer approaches to pick up this moss, the watchful glutton is said to drop from his perch upon the neck of the animal, drive his crooked claws into the flesh, fasten himself firmly, and from some deep wound to drink the blood of the unfortunate deer, until exhaustion and death is produced. Such relations are so frequently repeated of this animal that they have long ago ceased to be doubted, and it may seem like supererogatory scepticism to doubt on the subject at present. Thus much, however, it is due to truth to state, that we have examined with some interest the authorities originating such accounts of the sagacity or instinct of the wolverene, and have not been able to find any thing more satisfactory than mere assertions relative to the European glutton. It is not objected here that these assertions are unfounded, but they are gratuitous, at least as applied to the wolverene or American glutton, since Hearne and other travellers residing in the regions where this animal is most abundant, make no mention

of any such thing concerning it. The necessity of scepticism relative to the habits of the wolverene becomes the more obvious, when it is recollected how much of what was formerly believed as unquestionable, has been proved to be fable, resting on nothing better than the fancy of Olaus Magnus.*

The regions inhabited by this animal are supplied most abundantly with small quadrupeds, and with birds as well as with the larger animals, so that it is quite probable that without any very great exercise of ingenuity it is capable of procuring a plentiful subsistence. When taken captive and retained in confinement, its disposition does not seem by any means untameable, nor is its voracity especially remarkable.

Nothing however is better ascertained, than that the wolverene is one of the most destructive animals found in the northern part of this continent. It destroys great numbers of young foxes during summer, while they are small, discovering their burrows by its keen scent, and, if necessary, enlarging the cavity so as to gain access to the bottom of the den, where the mother and cubs are speedily destroyed. —The wolverene is not less inimical or destructive to the beaver than other animals, though the habits of the beaver expose it less to this sanguinary quad-

---

* Hoc animal voracissimum est, reperto namque cadavere tantum vorat ut violento cibo corpus instar tympani extendatur: *inventaque angustia inter arbores se stringit ut violentius egerat:* sicque extenuatum revertitur ad cadaver et ad summum usque repletur, *iterumque se stringit* angustia priore!" Ol. Mag. Hist. de Gent. Septentrion.

ruped, which is generally successful in securing his prey only when the beaver is caught at any distance from the margin of the water.

The fur of the wolverene is of considerable value, and the natives of the northern parts of Asia highly esteem the skin of the glutton for making or ornamenting their robes. The skin of the wolverene is not so highly valued by the Indians, nor by the fur traders. The animal does not breed in sufficient numbers to furnish any great collection to the fur traders, and but few skins are sent by the companies to the merchants.

The wolverene is about two feet two inches long from the end of the nose to the origin of the tail, and the latter is about eight inches in length, if the hair on its extremity be included; without measuring the hair, the length of the tail is but four inches. The fore legs are upwards of eleven inches long, and the hind legs one foot. The face is blackish as high as the eyebrows, and between these and the ears we find a space of a whitish and brownish tint. The ears are covered with harsh hair, the lower jaw and inside of both fore legs are spotted with white; the upper part of the back, thighs, and the under part of the belly are brown, or brownish black. The sides are of a fine chesnut colour, from the shoulders to the beginning of the tail. There is a white spot over the navel; the parts of generation are reddish. The short hair of this animal is whitish. The eyes are small and black.

There is a small tubercle at the under part of each digit, and four others under the palm, forming a semi-

circle with another posterior tubercle; the hind feet have a similar arrangement, but have no tubercles at the heel, which are slightly raised from the ground in walking.* There is considerable difference in the markings of the skins brought from Hudson's Bay, some being darker than others, and some having the band of lighter hairs, which runs along the sides and over the back and tail, very obscure. In numerous individuals greater variations may be found, owing to the circumstances of age, state of pelage, &c.

---

* See Desmarest, Mammalogie, p. 174.

CHAPTER XI.

Tribe II.—Digitigrada; *Digitigrade Animals.*

The animals belonging to this tribe are characterized by moving on the extremities of their digits, and being endowed with a greater degree of agility than that possessed by the plantigrade tribe.

The first subdivision of this second tribe has but one tuberculous behind the upper carnivorous tooth. The length of their bodies, and the shortness of their legs, enable them to pass through very small openings with facility, and their vermiform appearance has procured for them the general appellation of vermin. They are small and weak creatures, but are extremely sanguinary and destructive, living in a great degree on the blood of their victims. They have no cœcum, and do not become torpid during the winter.

Genus XII.—*Mustela*; L. Marten.

GENERIC CHARACTERS.

A slender vermiform and very long body, the back of which is convex when the animal is in a state of repose. The head is small, oval, and apparently flattened above, having short and rounded external ears. The limbs are very short and five toed, the

digits being armed with very sharp and crooked nails; the tail is of a middling length. There are some small glands on each side of the anus, which secrete a very fetid fluid, of a powerful musky and unpleasant odour. The teats are situated upon the belly.

Dental System.

34 or 38 Teeth:

16 or 18 Upper	6 Incisive	2 Canine	8 or 10 Molar.
	4 or 6 False Molars	2 Carnivorous	2 Tuberculous.
18 or 20 Lower	6 Incisive	2 Canine	10 or 12 Molars.
	6 or 8 False Molars	2 Carnivorous	2 Tuberculous.

In the upper jaw we find three incisive, one canine, two or three false molars, one carnivorous and one tuberculous tooth. The incisive and canine offer nothing remarkable, except that their internal lobe is very small. The first false molar is a very small tooth with a single root; the crown of this is terminated by a very blunt point, and the tooth is rudimental. The two succeeding teeth have several roots, thin from without inwards, broad from before backwards, and very pointed. The first is rather smaller than the second, and they are both regular. The carnivorous does not differ materially from that of the cat, except that the internal tubercle is more distinct, and the middle part larger and more acute.

In the lower jaw there are three incisive teeth, one canine, three or four false molars, one carnivorous and one tuberculous tooth. The false molars come immediately after the base of the canine.—The first is rudimental and has but a single root, the three following have two roots, and the form of regu-

lar false molars, and are placed somewhat obliquely in the jaw. The carnivorous tooth resembles that of the cat, except in the spur, which is developed at its posterior part. The tuberculous is small and round, its crown being terminated by three small points.

In their reciprocal position, the relations of these teeth are nearly the same as those we have heretofore examined. All the difference is, that the anterior part of the lower tuberculous rests against the posterior portion and internal part of the upper tuberculous tooth; the great development of the internal tubercle of the inferior carnivorous, corresponds to the superior tuberculous tooth.

Species I.—*The Ermine Weasel.**

Mustela Erminea.—L.†

Mustela Candida sive animal Ermineum recentiorum; Ray. Syn. quad. p. 198.
Hermellanus; Charlet. Exer. p. 20.
L'Hermine; Buff. t. 7, p. 29, fig. 2.
The Ermine; Penn. quad. ii. p. 35.
Stoat Ermine; Sabine, App. p. 652.

Among the small quadrupeds inhabiting this continent, few are to be found equalling the ermine in beauty—perhaps none that excel it in the qualities of courage, graceful celerity of movement, and un-

---

* *Germ.* Hermelin, Hermelinwiesel; *Dutch,* Hermyn; *Swed.* Sekat; *Norw.* Roskat; *Russ.* Gornostai; *Fr.* Rosselet, Hermine; *Ital.* Armellino, Ermellino.

† The beautiful animal generally known throughout North America as the *weasel,* or *common weasel,* and considered by naturalists as the common weasel of Europe (*m. vulgaris,*)

tiring activity. Its whole aspect inspires the beholder with an idea of its character, which is well supported by its actions. The long and slender body, bright and piercing eyes, keen teeth and sharp claws, clearly show that, however diminutive the animal may appear, it is destined by nature to destroy other creatures more numerous and less powerful than those of its own race; this length and slenderness of body is accompanied by a peculiar degree of flexibility, and by a strength of limb, which, in so small an animal, may be fairly esteemed surprising. There is scarcely an opening through which its prey can enter, where the ermine cannot follow, and having once gained access, its instinctive destructiveness is only allayed when no other victim remains to be slaughtered.

In the northern parts of this continent, and the northern portions of Asia, the ermine is found in the greatest abundance; yet it is by no means limited to northern regions, since it is found throughout a vast expanse of country, reaching from the highest northern latitudes to the middle states of the Union. In the middle and eastern states it is most generally known as the *weasel;* farther north it is called *stoat* in its summer, and *ermine* in its winter pelage of pure white.

The habits of the ermine weasel are very analogous to those of the common weasel of Europe, and as its

---

has, by recent examination and comparison, been proved to be the ermine in summer pelage. For this interesting observation we are indebted to the researches of that assiduous cultivator of Natural Science, Charles L. Bonaparte.

general configuration is so nearly similar, it is not surprising that this animal should have been confounded with the European species. This weasel frequents the barns and outhouses of plantations, and its retreat is generally well secured beneath the floors or rafters, amid accumulations of timber or stone, or in similar situations. Mice, and various other depredators on the granary, are the special objects of its pursuit, and the rapid multiplication of many of these devourers of grain could scarcely be sufficiently restrained, were it not that the ermine is capable of tracing them throughout their labyrinths, and possesses the disposition to destroy all that come within its reach. If the efforts of this weasel were confined to the destruction of these little depredators, we might consider it as the best friend to the husbandman; but occasionally a contribution is levied on the hen-roost, and the morning's light exhibits an universal slaughter of the poultry, whose throats are cut, or heads eaten off. It is scarcely possible to prevent such occurrences when these animals are resident in the vicinity, as they can gain access where few other creatures can enter; then their swiftness of motion and keen bite soon render the escape of their victims impossible.

Still it must be acknowledged that there are many situations in which the services of this little animal may be esteemed a positive good; for such is the fecundity of many of the depredators on the grain, that nothing short of the destruction of the whole crop would ensue, were it not that the weasel is continually thinning their ranks and killing greater numbers than are required for its mere subsistence.

The disposition which makes this weasel so useful under ordinary circumstances, forbids an attempt to increase its usefulness by domestication, for the purpose of freeing our houses from mice, &c. Notwithstanding it might be so far tamed as to take up its residence about our dwellings, it would be exceedingly dangerous to expose the lives of the inmates to the blood-thirstyness of this quadruped, which is rendered doubly dangerous from the circumstance of seeking its prey during the hours devoted by man to sleep.

The ermine is very common in the vicinity of Hudson's Bay, yet it is found in greater abundance on barren grounds or open plains than in the woods, which in all probability is owing to the greater number of mice that frequent the former situations.

While pursuing their prey, ermines are said to resemble little hounds running upon a trail; their tails are carried horizontally, while with eager haste and most agile movements they follow their prey by the scent. Except when in their summer dress, it is very difficult to distinguish their actions, as in winter their pure white pelage is so nearly the colour of the snow, as to render it almost impossible to see them. When the ermine is hunted and closely pursued, like other species of this genus, it has the faculty of ejecting from a peculiar glandular apparatus a fluid of a powerful musky odour; this, though it may serve to retard the pursuit of some of its enemies, is too harmless a resource to save the ermine from the hands of man.

There is but little probability of taming the ermine unless it be captured very young, and even

then the period of its mildness would pass away with its early youth. When caught in a trap and subsequently kept in a cage, it exhibits every sign of the most unappeasable disposition to kill or injure every being it is able to master. Various attempts have been made to domesticate the ermine, but all without success, and frequently the restlessness and impatience of the animal has appeared to increase with the duration of its imprisonment.

The following interesting account of an attempt to tame the ermine is from the pen of Capt. R. Lyon, of the British navy, (to whom we owe many of the facts here stated,) whose excellent observations, conveyed in a delightful style, while they impart the purest satisfaction, always awaken our regret, that his opportunities of studying from living nature were not more ample, in order that our instruction and pleasure might have been extended in the same degree.

"In the night my servant caught in a small trap a very beautiful ermine, and I had soon a convenient cage made, for perhaps the first of these animals which was ever caught on board a ship four hundred yards from the land. He was a fierce little fellow, and the instant he obtained day-light in his dwelling, he flew to the bars and shook them with the greatest fury, uttering a shrill passionate cry, and emitting the strong musky smell which I formerly noticed. No threats nor teazing could induce him to retire to the sleeping place, and whenever he did so of his own accord, the slightest rubbing on the bars was sufficient to bring him out to the attacks of his tormentors. He soon took food from the hand, but not

until he had used every exertion to reach and bite the fingers which conveyed it; this boldness gave me hopes of being able to keep my little captive alive through the winter; but he was killed by an accident in a few days."*

We have mentioned that in the eastern and middle parts of the United States the ermine weasel frequents out-houses, stone-heaps, piles of timber, &c. and though capable of following its prey into small holes, does not burrow in the earth. Captain Lyon had an opportunity of observing a singular kind of burrow made by this animal in the snow, resembling the elevations of the soil produced by the passage of a mole. These galleries in the snow were serpentine in their direction, and in the neighbourhood of the hole or residence the circles were multiplied, as if to render the approach more intricate.

The ermine weasel, in its summer pelage, is of a light ferruginous or chesnut-brown colour over the whole of the head; this colour extends in a rounded spot below the angle of the jaw; the whole back, sides, and half of the tail next the body being of the same colour. The other portion of the tail is blackish, becoming gradually darker as it approaches the extremity, where it is quite black, and the hairs terminate in a point resembling that of a camel's hair pencil. The external and anterior half of the fore legs are of the same colour as the upper part of the body, and there are three small spots of white over the base of the toes of the right foot, and one on the left,

* Lyon's Narrative, &c.

over the first or shortest digit, in the specimen before me.

The under part of the animal is nearly of a pure white, beginning at the extremity of the under jaw and spreading broadly as it passes over the throat, where it forms a point on each side, almost reaching to the base of the ear. The white then narrows slightly in descending the neck, spreads broadly upon the breast, and then suddenly growing narrower passes down the inner and posterior part of the fore legs. Thence it passes along the belly, where it is again narrowed, and then spreading out widely at the groin, it terminates at the upper and anterior part of the thigh, becoming visible for a short distance on its outside.

The fur in summer is short, soft and silky to the touch, not varying perceptibly in length except on the snout, where it is quite short, and covering the digits of the fore and hind feet, where it is rather longer than on the other parts, and conceals the nails entirely. On the tail the hairs are longer and coarser than on the rest of the body, though still soft.

The ermine weasel, in its winter pelage, is of a pure white over the whole head, body and limbs; half of the tail to its extremity only retaining its black colour. This white colour is so pure in the northern regions as to render it almost impossible to distinguish these animals upon the snow, when the ends of their tails are not in sight. The whiteness is not always thus pure, but the fur is slightly tinted with pale yellow on the tip.

The ear of the ermine weasel is broad at its basis, and the orifice leading to the internal ear large; the

ears are not covered with fur on their posterior surface, but by a very short down. On the superior and anterior part of the external ear, there is some hair of considerable length growing from that part of the ear which would correspond with the helix and anti-helix of the human ear, and almost covering the concha. The eyes of this animal, are small and black, yet prominent, clear and lustrous.

The fur of the ermine becomes longer, thicker, and finer in winter than in summer; this effect seems to be a general consequence of rigorous seasons on all animals, without reference to the permanence or mutability of their colouring.*

Species II.—*The Pine Marten.*

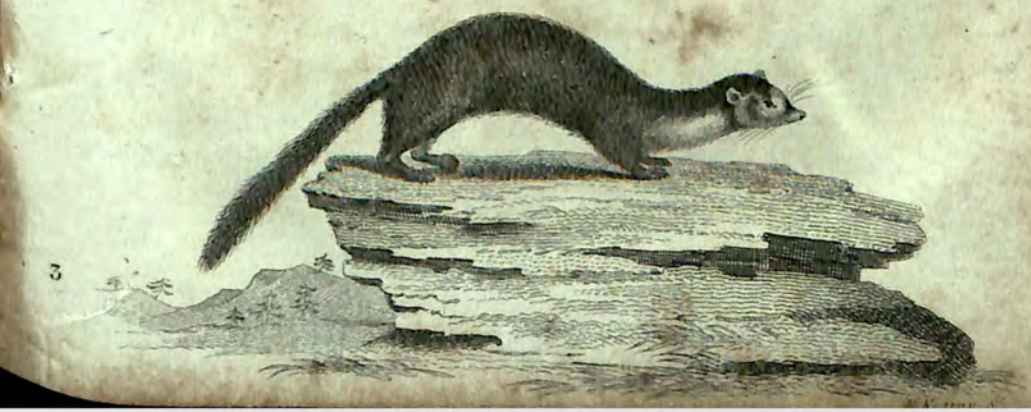
Mustela Martes; L.

Mustela Martes; L. Gmel. p. 95.
Mustela Abietum; Raii. quad. p. 200.
Martes Gutture Luteo; Agric. An. Subter. 485.
La Marte; Buff. vii. 185, pl. 22.
Baum Marter; Klein, quad. p. 64.
Yellow Breasted Marten; Penn. quad. ii. p. 42, No. 244.
Pine Weasel; Penn. quad. ii. p. 42, No. 244.
Pine Marten; Sabine, Zool. App. to Franklin's Exp. p. 651.

The pine forests of the northern parts of this continent are inhabited by vast numbers of these martens, and the common name by which the species is known is derived from the preference they show for the pines, in whose lofty tops they reside. This species is also found in Northern Asia and in Europe; its fur is highly esteemed wherever to be ob-

* See Sabine, p. 653.

1



3

tained, and the numbers of the pine marten may be fairly inferred from the vast amount of skins annually collected. In the year 1743 the Hudson's Bay company sold 12,370 good, and 2,367 damaged skins of the pine marten; in the same year the French sent from Canada 30,325; if to these be added the numbers consumed in America, and those rejected by the traders when finally arranging their packages, we must believe that this species is one of the most numerous belonging to our continent.

The pine marten very closely resembles the common European marten, (M. Foina,) and the two species may be readily mistaken for each other when inattentively observed. But they may be distinguished with facility by remarking that the head of the pine marten is not so long as that of the European, neither is its body as large. The pine marten has longer legs, finer, thicker and more glossy fur, and the throat is marked by a broad yellow or orange coloured spot, while the same part in the European marten is white.

The pine marten resembles the ermine weasel in habits and disposition, destroying great numbers of small quadrupeds and birds, but shows no disposition to approach the habitations of man. The pine marten frequently has its den in the hollows of trees, but very commonly takes possession of the nest of some industrious squirrel, which it enlarges to suit its own convenience, after putting the builder to death. It *is said* to feed occasionally on fruits, berries, honey, &c., but, with the exception of the last substance, we should have strong doubts of the statement; when very much pressed by hunger, this

marten may feed on "fruits, berries, &c." but it is too exclusively carnivorous to use such food if animal matter is to be obtained.

The pine marten is of a brilliant fulvous brown colour over the whole of the body, with the exception of the throat and anterior part of the breast, which are of a yellow or orange hue, varying in depth in different individuals. The general colour of the fur is owing to the intermixture of two sorts of hair, one of which is longer and coarser, of an ash colour near the body, then of a clear fawn colour, and ending at the tip with a brown mixed with bright red: the other is a soft, fine, downy hair, slightly coloured with white and pale brownish yellow. The end of the snout is of a blackish brown colour, and the legs and tail are of the same, having little or none of the yellow brown. The margins and internal surface of the ears are covered by a whitish yellow fur.

The pine marten is most frequently obtained in its summer pelage, which is neither so brilliant, nor of the silky fineness which it possesses in winter. The colour becomes paler, particularly about the head; the yellowness on the throat cannot be easily distinguished from that on the rest of the body, as it changes to a dingy white, which runs into and becomes blended with the lighter brown of the surrounding parts.* The fur of this marten is extensively used in the manufacture of hats, and is most generally preferred for ornamenting and increasing the warmth of winter dresses.

* Sabine.

The length of the body of this animal is about eighteen, and that of the tail about ten inches.—There is a very marked difference in the size of the sexes, the male being one-third larger than the female. Their season of sexual intercourse, according to Linné, is the month of February, and in December the female brings forth seven or eight young; hence there is not much probability of the species being speedily extinguished, notwithstanding the vast numbers annually killed for the sake of their skins. A little care on the part of the hunters to avoid destroying animals during their breeding seasons, would in all cases tend to secure the permanence of their sources of profit.*

Species III.—*Pennant's Marten.*

(*Commonly called the* Fisher.)

Mustela Pennanti; Erxl.

Mustela Pennanti; Erxl. Syst. Mam. p. 470, sp. 10.
Mustela Melanorrhynca; Bodd. Elench. an. p. 88, sp. 13.
Mustela Piscator; of various authors.
Fisher Wecsel; Penn. Hist. Quad. Ed. 3. p. 50. No. 246. Arct. Zool. i. p. 94.
Fisher; Sabine, App. to Franklin's Exped. p. 652.
Wejack; Hearne, Journey, &c. 8vo. ed. p. 378.

The impropriety of giving to animals names that may mislead the inexperienced, is clearly shown in the case of the present species. As it is commonly

---

* The names of northern Indian girls are chiefly taken from some part or property of a marten; such as the white marten, the black marten, the summer marten, the marten's

called the *fisher*, most persons directly infer that the animal subsists on fish, and hence resembles the otter and other quadrupeds in its fondness for an aquatic mode of life. Neither of these conclusions is correct. Like the pine marten and various kindred species, this animal subsists by preying on various small quadrupeds, birds, eggs, &c. and so far from being addicted to the water, Hearne states that it manifests as much repugnance to that fluid as a domestic cat. That it will eat fish when they are thrown on shore there is little doubt, as almost all the carnivorous animals are delighted with such food; but we have no proof that this marten is in the habit of *fishing* for itself.

Since the common name is injudicious, by inducing erroneous notions of the habits and manners of the animal, and has no connexion with any distinctive character, we have preferred a translation of the scientific name given to this species by ERXLEBEN, which, if equally inexpressive of any peculiarity, does not produce any false or incorrect opinions.

Pennant's marten is found in various parts of North America, from the state of Pennsylvania to as far north as the Great Slave Lake, where it was seen by Capt. Franklin. Its habits are stated to be very similar to those of the pine marten, climbing trees, catching mice, rabbits, and partridges, with as much

---

head, the marten's foot, the marten's heart, the marten's tail, &c. Matonabbee had eight wives, and they were all called Martens. *Hearne*, p. 94. This *variety* of names may serve to remind the reader of Dandie Dinmont's celebrated family of Pepper and Mustard terriers.

facility as that animal. Hearne informs us that this species is easily domesticated, becomes fond of tea-leaves, is very playful, and has a pleasant musky smell. We may correctly infer that this species is not very scarce or uncommon, if we remark the numbers of them which are collected by the fur traders. Pennant says that five hundred and eighty skins were sent in one year from the states of New York and Pennsylvania, and Sabine remarks that the Hudson's Bay company sent eighteen hundred skins to England in one year.

The length of this marten is from twenty-four to thirty inches without the tail, which is from thirteen to seventeen inches long. The snout is pointed, and the fur near the nose is brown, in some individuals approaching to black: the ears are broad, short, and rounded, having a dusky fur on the outside, which appears lighter on their tips; the throat is brown, with a few white tipped hairs; the belly and legs are of a dark brown. The feet are very broad and covered with hair, which conceals the sharp, strong, white claws. All the fur on the superior part of the body is dark at the base, yellowish above, then tipped with black. The fur on the head is short, but gradually increases in length towards the tail, and its colour changes, losing much of the yellowish, and assuming a chestnut hue. The tail is full, bushy, black and lustrous, being smallest at the end.*

* Penis hujus, *P. Lotori* simillimum est.

Species IV.—*The Mink.*

Mustela Lutreola; L.

Viverra Lutreola; Pallas. Spicil. Zool. xiv. p. 46, t. iii. p. 462.
Lutra Minor: Erxl. Mamm. p. 451, No. 3. Schreb. Saeugth, iii. p. 462.
Lesser Otter; Penn. Quad. ii. p. 51. No. 249, Arct. Zool. i. p. 89. No. 28.
Jackash of the fur traders, Hearne. Journey, &c. 8vo. ed. p. 377.
Mænk, of the Swedish colonists in America.

This animal is found throughout a great extent of country from Carolina to Hudson's Bay, and in its habits and appearance so much resembles the otter, as to have acquired the common name above quoted from Pennant.

The favourite haunts of this species are the banks of streams, especially in the vicinity of mill-seats or farm-houses, where it inhabits holes near the water, or in the ruins of old walls, &c. Its food in a great degree consists of frogs and fish, but it frequently invades the poultry yards and commits as extensive ravages as any of its kindred species, cutting off the heads and sucking the blood of the fowls in a similar manner. Rats, mice, and other small animals, also fall victims to the mink, and when this animal takes up its residence about wharves or bridges, it does great service by the destruction of such vermin. Lawson, in his history of Carolina, says that the mink is very destructive to the tortoise, scraping their eggs out of the sand and destroying them, and adds that it feeds upon the fresh water muscles, the shells of which are often found in considerable quantity about the mouth of its hole.

The mink is an excellent swimmer and diver, and can remain much longer under water than the musk rat. When provoked this animal ejects from its anal glands a fetid liquor, which is exceedingly unpleasant.

HEARNE states that like the larger otter they are frequently found in winter several miles from any water, and are often caught in traps set for martens. They are supposed to prey on mice and partridges like the marten; but when near the rivers and creeks they generally feed on fish. They vary very much in size and colour. "They are very easily domesticated, and in a short time become so familiar that it is scarcely possible to keep them from climbing up one's legs and body, and never feel themselves happier than when sitting on the shoulder of their master. They sleep very much during the day, but prowl about and feed in the night; they are very fierce when at their meals, not suffering those to whom they are most attached to take it from them. I have kept several of them, but their overfondness made them troublesome, as they were always in the way, and their so frequently emitting a disagreeable smell rendered them quite disgusting.*"

In addition to the latter circumstances, it may be suggested that an animal naturally so much addicted to destruction and so blood-thirsty, might be a dangerous pet in case it were not regularly supplied with food, especially in a house in which there might be small children to tease or excite its anger.

* Octavo edition, p. 377-8.

This animal is about twenty inches in length from head to tail, and the tail is four inches long. The ears are rounded, the top of the head in some individuals hoary, in others tawny; the hair of the body is of two sorts, the short being of a tawny colour and the longer of a dusky hue. The feet are broad, webbed, and covered with hair. The tail is dusky and ends in a point. The fur is principally used by the hatters.*

Species V.—*The Sable.*

Mustela Zibellina; L.

Martes Zibellina; Briss. Quad. p. 248.
Zibeline; Buff. Hist. Nat. xii. p. 309.
Sable Weesel; Penn. Quad. ii. p. 43, Arct. Zool. 1, p. 90. *A specimen in winter pelage in the Philadelphia Museum.*

In Siberia, Kamtschatka, and the Kurile islands, this species is very common, while in North America it is almost unknown; more we believe because

---

* From a careful comparison of the descriptions given by the systematic writers, and an examination of numerous skins of the animals, we are inclined to believe that the Pekan, (*M. Canadensis,*) and Vison, (*M. Vison,*) are both nothing more than mere varieties of the Mustela Lutreola, which we have seen having all the markings by which they would distinguish the species above mentioned. Nothing but a reference to living nature can decide the doubt, and this reference is not at present in our power. A new species has been proposed on no better foundation than an overstuffed and faded skin of the common mink, belonging to the Philadelphia Museum.

the northern parts of this continent have not been sufficiently explored, than owing to the absence of the animal. PENNANT, in his Arctic Zoology, states, on the authority of PALLAS, that this animal "extends across the whole continent, the skins being frequently found among the furs which the Americans traffic with among the inhabitants of the Tschutscki noss." The skin from which the first named author described the species was from Canada, and "was of the bleached or worst kind."

Captains Lewis and Clark, while on their expedition, obtained one of these sables, and the specimen was prepared and mounted for the Philadelphia Museum, in which it may now be seen. It is in that state of pelage which Pennant speaks of above, the fur being "bleached," or rather the individual is in its winter dress, the colour being of a dingy white, or white so tipped with brownish red as to give something of a faintly reddish hue to the whole animal, except the tail, which is distinctly brownish, becoming darker towards the extremity. The person who prepared this individual was led to believe it an albino from the colour of the fur, and hence has inaccurately given it pink-coloured or albino eyes, but, with this exception, the specimen is still in good condition.

The habits of the sable very closely resemble those of the martens we have before described, but we have so little positive information relative to the species as it exists on this continent, that we do not feel at liberty to enter into any details merely inferred from what is known of the European species. The skins of sables are esteemed among the most

precious peltries, and yield large sums annually to the Russian government.

The length of the animal from the nose to the tail is about twenty inches; the tail, including the hair at the extremity, is eight inches long, half of which length is due to the hair. The general colour, when in winter dress, is an obscure fulvous or tawny hue. The head and ears are whitish and broad, somewhat triangular in shape, and rather pointed at top. The feet are very large and covered with hair on the upper and under surfaces, which conceal the nails.

CHAPTER XII.

Genus XIII. Mephitis; C. *Skunk.*

Fr. Chinche; Enfant du diable Bête puante.
Germ. Stinkthier.

GENERIC CHARACTERS.

The head is conical and small, having a somewhat blunt snout, and small rounded ears. The feet have five toes, those on the fore-feet being large, strong, and suited for burrowing.

Dental System.

32 Teeth:

14 Upper	6 Incisive	2 False Molars	
	2 Canine	2 Carnivorous	
	6 Molar.	2 Tuberculous.	
18 Lower	6 Incisive	6 False Molars	
	2 Canine	2 Carnivorous	
	10 Molar.	2 Tuberculous.	

In the upper jaw the incisors and canines are exactly similar to those of the martens. There are two false molars, one of which is very small and rudimental, and the other regular, with two roots and one point. The carnivorous tooth is remarkable for the great developement of the internal tubercle, which adds much to its thickness, and gives it a triangular form; and the tuberculous tooth is also peculiar in its dimensions, which are nearly the same from the anterior to the posterior edge as from the internal to the external. In the martens this tooth

is only extended in the latter direction, and its slightly salient and rounded tubercles are not distinctly marked. In the present genus these tubercles are very strong and angular, which makes this really a triturating tooth; there are four principal tubercles separated by depressions of some depth, but their extremely irregular figure sets description at defiance.

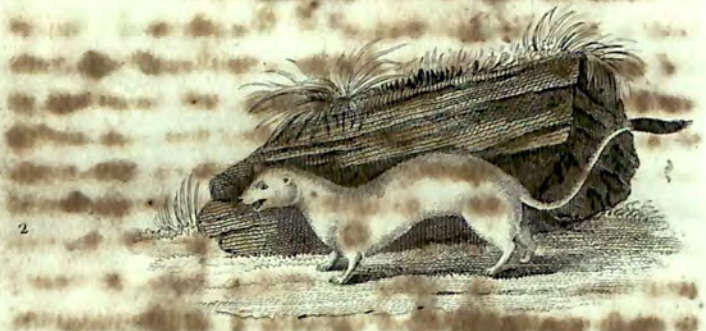
In the lower jaw the incisors and canines are similar to those of the martens, without exception, and the same is the fact relative to the three false molars: the first is much smaller than the other, which has the form and proportions of the regular false molar. The carnivorous is divided into two nearly equal parts by a rather deep cavity: the anterior is formed by three pointed tubercles arranged triangularly, and the posterior by a spur ending in two sharp and rather slender tubercles, separated by a deep depression. The tuberculous tooth is similar to that of the martens.

In their reciprocal position, the peculiar characters of the carnivorous and tuberculous teeth cause the only difference between the relations of these teeth and those we have remarked to exist in the martens. The great internal tubercle of the upper carnivorous tooth, fills the space between the three triangularly ranged tubercles of that belonging to the lower jaw, and the spur of the latter is in relation with the anterior half of the great superior tuberculous tooth, the posterior part of which corresponds with the inferior tubercle.

The genus mephitis is therefore much less carnivorous than the marten and wolverene, on account

ROYAL ASIATIC SOCIETY
LIBRARY
BOMBAY
BRANCH

Drawn by Rider. Engd by C.E. Ellis.



Drawn by W.W. Wood.

1 *Skunk* 2 *Ermine* 3 *Mink*

of the thickening of the cutting teeth, and more frugivorous in consequence of the enlargement of the tuberculous teeth.

Species I.—*The Skunk.*

Mephitis Americana; Desm.

Viverra Mephitis; Gmel. [L.] Syst. Nat. p. 88, No. 13.
Chinche; Buff. Hist. Nat. tom. 33, pl. xx. fig. 2.
Enfant du diable; Charlev. Nouv. France v. 196.
Skunk Weesel. Penn. Quad. ii. p. 65, No. 263.

Pedestrians, called by business or pleasure to ramble through the country during the morning or evening twilight, occasionally see a small and pretty animal a short distance before them in the path, scampering forward without appearing much alarmed, and advancing in a zig-zag or somewhat serpentine direction. Experienced persons generally delay long enough to allow this unwelcome fellow-traveller to withdraw from the path: but it often happens that a view of the animal arouses the ardour of the observer, who in his fondness for sport thinks not of any result but that of securing a prize. It would be more prudent to rest content with pelting this quadruped from a safe distance, or to drive it away by shouting loudly; but almost all inexperienced persons, the first time such an opportunity occurs, rush forward with intent to run the animal down. This appears to be an easy task; in a few moments it is almost overtaken; a few more strides and the victim may be grasped by its long and waving tail—but that tail is now suddenly curled over the back, its pace is slackened, and in one instant the con-

dition of things is entirely reversed;—the lately triumphant pursuer is eagerly flying from his intended prize, involved in an atmosphere of stench, gasping for breath, or blinded and smarting with pain, if his approach were sufficiently close to allow of his being struck in the eyes by the pestilent fluid of the skunk. Should the attack on this creature be led by a dog, and he be close at hand when the disgusting discharge is made, he runs with tail between his legs howling away, and by thrusting his nose into the soil as he retreats, tries to escape from the horrible effluvium which renders the air in the immediate vicinity of the skunk too stifling to be endured. Thus is an animal, possessed of very trifling strength and no peculiar sagacity, protected by the hand of nature against the most powerful and destructive enemies. A few glands secrete a most noisome and intolerably stinking fluid, and this scattered with peculiar force upon the body of its enemies, or even in the air, is sufficient to disarm the violence of most quadrupeds, and induce man himself rather to avoid than to seek an encounter.

The organs by which this fluid is formed are placed near the termination of the digestive tube, and the ducts from the glands open into the rectum, by the aid of whose muscles the fluid is ejected with astonishing force, and is aimed with great accuracy, rarely missing the object if discharged while within the proper distance. The faculty this animal possesses of annoying its enemies by the discharge of the fluid just mentioned, causes it rather to be shunned than hunted, which the value of its skin would otherwise be sure to occasion.

The skunk inhabits the whole of North America, and is also found throughout a considerable part of the southern portion of this continent. As the coloured markings vary exceedingly in different individuals, it is not surprising that naturalists have made several species of this animal, though without any foundation in nature. Of several specimens in the Philadelphia Museum there is not one corresponding with the other in colour; neither have we ever seen two exactly alike. Sometimes they are of a uniform dark brown colour, having a white spot on the top of the head; sometimes they have two white stripes, commencing from a white patch on the back of the head and neck, passing outwards as far as the middle of the back, while only the tip of the tail is pure white; again, other individuals are found with white and black rays on the back and sides, and the tail in great part white, as the skunk is represented in the ordinary figures. All the species proposed by systematic writers are reducible to one, the subject of this article, *Mephitis Americana*, or American skunk.

The fetor produced by the skunk is especially characterized by all who have experienced it as suffocating or stifling, which is owing to its peculiar concentration. The predominant odour is that of muskiness, but in so condensed and aggravated a form as to render it almost insupportable, even at a considerable distance from the spot where it is first discharged. A very good idea may be formed of this stench by breaking and smelling a leaf or stalk of the plant called skunk cabbage, (the *Dracontium fetidum*, or *pothos fetidum*) resembling it in every

respect except in strength, which perhaps no artificial accumulation of this vile scent could ever equal.

The fluid ejected by the skunk is not merely offensive by its stench, but also in consequence of its highly stimulating and acrimonious qualities. When any of it is thrown into the eyes, it is productive of very violent and dangerous inflammation; we must suppose that this peculiar acrimony, rather than any mere offensiveness of odour, is the cause of the marked repugnance evinced by dogs, as these animals show not the slightest sign of uneasiness from the presence of the most nauseous and putrid effluvia from animal or vegetable substances, yet run howling and trying to thrust their noses into the ground after having been exposed to this pungent perfume from the skunk.

In its extreme volatility it bears a considerable resemblance to true musk. The smallest drop is sufficient to render a garment detestable to the wearer and his companions for a great duration of time, and without any perceptible diminution of intensity. Washing, smoking, baking and burying articles of dress, and in fact every effort short of destroying the materials of which they are made, seem to be equally inefficient for its removal.—This scent is not only thus enduring when the fluid is sprinkled upon clothing, but the spot where the animal is killed, or where the matter was ejected, retains it for a great lapse of time. "When I was at Cumberland House, (says Hearne, p. 378) in the fall of 1774, some Indians that were tenting on the plantation killed two of these animals, and made

a feast of them, when the spot where they were singed and gutted was so impregnated with the nauseous smell which they emit, that after a whole winter had elapsed, and the snow had thawed away in the spring, the smell was still intolerable." A friend informed the author of this work, that he had plainly perceived the odour of the fluid ejected by this animal from across the Hudson river, near Albany; we have no doubt of its being possible to smell it at a much greater distance when the wind blows from the spot where the effluvium is thrown out.*

However singular the fancy may appear, we are assured by Catesby that he has seen one of these animals tamed as a pet, and following its owner like a little dog, without offering to offend any one by its peculiar odour, which it has the power of dispensing at will. When it is recollected that on any provocation or threatened injury, the skunk immediately fires upon his disturber, it will be conceded that such

---

* Professor KALM gives the following anecdotes in his travels:—"In 1749 one of these animals came near the farm-house in which I lodged; it was winter, and during the night the dogs were aroused and pursued it; in a moment so fetid an odour was diffused, that, being in bed, I thought I should have been suffocated. About the end of the same year, another slipped into our cellar, but did not make the least unpleasant smell, because it only diffuses this when hunted or disturbed. A woman who discovered it at night by its shining eyes killed it, and at the instant it filled the cellar with such a stench, that not only was the woman sick during several days, but the bread, meat and other provisions kept in that cellar were so infected as to be entirely spoiled, and required to be thrown away."

a pet must require a very cautious management, for to startle it suddenly, or injure it accidentally, would expose both friends and enemies to a shower of "liquid sweets," which all "the odours from the spicy shore of Araby the blest" could not correct.

If the skunk be killed while unsuspicious of the approach of danger, or before time has been allowed for the discharge of his artillery of perfume, the animal is not in any way disagreeable, and may be approached closely, or even eaten without the least unpleasantness, if the glands be carefully taken out. Its flesh, when the odorous parts have been carefully removed, is said to be well flavoured, and resembles that of a pig considerably. It is eaten by the Indians, and occasionally by hunters, with much relish.

The skunk is most generally found in the forests or their immediate vicinity, having its den either in the hollow of an old tree or stump, or an excavation in the ground. It feeds upon the young and eggs of birds, and on small quadrupeds, wild fruits, &c. Occasionally the skunk gains access to the poultry-yard, where it does much mischief by breaking and sucking the eggs, or by killing the fowls. When resident in the vicinity of farm-houses, it remains for a long time without giving notice of its presence by emitting its offensive fluid, which proves how ridiculous is the notion that the urine of this animal is the source of its disgusting fetor; for, as Hearne justly observes, were this the fact, the whole country it inhabits would be rendered almost insupportable to every other creature.

We have already stated that the colour of the hair is very various in different individuals of this

species at different seasons and periods of life. Very commonly it is of a blackish brown over the whole of the body, except on the top of the head, or immediately between the ears, where there is a white spot, and the tip of the tail, also, is white. Some individuals have a slight white mark on the breast. The hairs of the tail are long and bushy, and, with the exception of their tips, are of a dark brown colour. But, as heretofore stated, scarcely two of them are coloured precisely in the same way. The length of a full grown skunk is about eighteen inches, and the tail about seven, the long hair at the extremity making nearly one-half of this length.*

---

* For a very long time the offensive fluid of this animal was almost universally believed to be its urine, with which it was said first to wet its bushy tail, and then, by a vigorous flourish, to scatter the perfume far and wide against its disturbers. It is not surprising that common observers should mistake the action intended to withdraw the tail from the course of the discharge for the manner in which the fluid is scattered.

We are informed by our friend, Mr. T. Kearney, that on one occasion, while going to visit a trap before day-light, he disturbed a skunk which was running along the path at some distance in advance of him, and was much surprised to observe that the course of the fluid discharged was rendered perfectly visible by a distinct *phosphorescent* light; the odour left no doubt of the animal whence it proceeded.

CHAPTER XIII.

Genus XIV. Otter; *Lutra*, Briss.

Ger. Fischotter; Flussotter; Fischdieb, &c. *Ital.* Lontra.
Fr. Loutre. *Swed.* Utter.

GENERIC CHARACTERS.

The animals belonging to this genus are characterized by a broad and flat head, which terminates in a blunt snout; small eyes and very short rounded ears. The whiskers are large; the tongue, though not very rough, is papillous. The body is larger in proportion than that of the marten. The very short legs are terminated by five toes, which have their phalanges united by a web or membrane, and are armed with sharp, not retractile claws. The pelage is composed of two sorts of hair, one of which is silky, soft, thick and short, the other long, scattered and rather bristly. The teats are placed upon the belly; on each side of the anus is situated an orifice leading to a small sack containing a fetid matter. These animals are excellent swimmers, reside in holes along the banks of fresh water streams, and feed almost entirely upon fish.

Dental System.

36 Teeth:

18 Upper	6 Incisive	6 False Molars	
	2 Canine	2 Carnivorous	
	10 Molar.	2 Tuberculous.	
18 Lower	6 Incisive	6 False Molars	
	2 Canine	2 Carnivorous	
	10 Molar.	2 Tuberculous.	

IN THE UPPER JAW the incisor and canine teeth are exactly similar to what we have seen in the marten, the glutton and skunk. The false molars are three in number, the first is very small and rudimental, the second slightly larger than the first, but much smaller than the third, is regularly conformed like all normal false molars. The carnivorous tooth is principally remarkable for the extent and form of its internal tubercle. It is no longer a salient point reposing upon a very large base as in the skunk, but a broad surface terminated at the inner side by a circular line, and bordered at this part by a continuous and salient spine. The tuberculous tooth has the dimensions and form of the same tooth in the marten; it is also more extended from the out to the inside than from before backward, and the inequalities which divide its surface differ in nothing from what we have observed in the animal just referred to.

IN THE LOWER JAW the incisors and canines have nothing to distinguish them from the dental system of the skunk; and the same is true of the false molar, the carnivorous and tuberculous teeth.

In their reciprocal position it results from the differences we have pointed out between the skunk and otter, that in the latter no tubercle fills the space left by the tubercles arranged in a triangle on the inferior carnivorous tooth. The first of these tubercles is at the anterior part of the tooth, and opposed to the hollowed centre of the broad surface, bordered by a spine which replaces in these animals the tubercle found in the same tooth of the skunk. The two other tubercles fill the void re-

maining between the carnivorous and opposite tuberculous tooth, and this last presents almost the whole of its crown to the posterior spur of the lower carnivorous tooth. Nothing is opposed to the inferior tuberculous tooth but the posterior edge of the analogous tooth of the upper jaw.

It is well known that the otters subsist principally upon fish; they also may be fed with flesh, and may be accustomed without difficulty to use vegetable food. Nevertheless, it would be difficult to determine by the teeth, whether they are more carnivorous than the skunk; because, while they appear to have carnivorous teeth which separate them farther from the marten than the carnivorous teeth of the skunk remove that animal, they have, on the other hand, less extensive tuberculous teeth than those of the latter genus.

Species I.—*The American Otter.*

Lutra Brasiliensis; Ray.

Mustela Lutra Brasiliensis: Gmel. L. p. 93.
Lutra Brasiliensis: Ray. Syn. Quad. p. 91.
Lutra Brasiliensis: Briss. Quad. p. 278.
Saricovienne de la Guyane: Buff. Supp. 6. p. 287.
Loutre d'Amerique: C. Rég. Anim. i. p. 151. tom. iv. fig. 3.
Lutra Canadensis: Sabine, App. to Franklin's Exp. p. 654.

Though the Brasilian Otter has long been regarded as a distinct species, the North American or Canadian Otter was almost uniformly confounded with its European analogue, until the distinctive characters were accurately pointed out by Sabine in the work above quoted. Cuvier considered the North

American as identical with the Brasilian species, and in this correct opinion he has been followed by most of the naturalists.

This otter inhabits South, as well as various parts of North America, along the fresh water streams and lakes, as far north as to the Copper Mine river. In the southern, middle and eastern states of the Union, they are comparatively scarce, but in the western states they are in many places still found in considerable numbers. On the tributaries of the Missouri they are very common; but it is in the Hudson's Bay possessions that these animals are obtained in the greatest abundance, and supply the traders with the largest number of their valuable skins. Seventeen thousand three hundred otter skins have been sent to England in one year by the Hudson's Bay company.

Nature appears to have intended the otter for one among her efficient checks upon the increase of the finny tribes, and every peculiarity of its conformation seems to have this great object in view. The length of body, short and flat head, abbreviated ears, dense and close fur, flattened tail, and disproportionately short legs with webbed feet, all conspire to facilitate the otter's movements through the water. In the crystal depths of the river, few fish can elude this swiftly moving and destructive animal, which unites to the qualities enabling him to swim with fish-like celerity and ease, the peculiar sagaciousness of a class of beings far superior in the intellectual scale to the proper tenants of the flood. In vain does the pike scud before this pursuer, and spring into the air in eagerness

to escape; or the trout dart with the velocity of thought from shelter to shelter; in vain does the strong and supple eel seek the protection of the shelving bank or the tangled ooze in the bed of the stream; the otter supplies by perseverance what may be wanting in swiftness, and by cunning what may be deficient in strength, and his affrighted victims, though they may for a short time delay, cannot avert their fate. When once his prey is seized, a single effort of his powerful jaws is sufficient to render its struggles unavailing; one crush with his teeth breaks the spine of the fish behind the dorsal fin, and deprives it of the ability to direct its motions, even if it still retain the least power to move.

The residence of the otter is a burrow or excavation in the bank of a stream or river, and the entrance to this retreat is under water; at some distance from the river an air-hole is generally to be found opening in the midst of a bush or other place of concealment. The burrow is frequently to be traced for a considerable distance, and in numerous instances leads to the widely spreading roots of large trees, underneath which the otter finds a secure and comfortable abode. The winter residence is generally chosen in the vicinity of falls or rapids where the water is least liable to be closed from the severity of the cold, and where the otter may find the readiest access to the fish upon which his subsistence depends. Otters have been seen during the coldest parts of winter at very considerable distances from their usual haunts, or from any known open water, as well as upon the ice of large lakes, a circumstance that appears the more singular as this animal is not

known to kill game on land at this season. When the otter is in the woods where the snow is light and deep, it dives if pursued, and moves with considerable rapidity under the snow. But its route is always betrayed by the rising of the superincumbent mass, and numbers of them are occasionally killed with clubs by the Indians, while thus endeavouring to make their escape. The old otters, however, are often able to disappoint their pursuers by force, if not by address, for they turn upon them with great fury and ferocity, and so desperate are the wounds inflicted by their teeth, that few individuals are willing to encounter the severity of their bite. The Indians have various methods of killing the otter, one of which is that of concealing themselves near the haunts of the animal on moon-light nights, and shooting them when they come forth for the purpose of feeding or sporting. A common mode of taking them is by sinking a steel-trap near the mouth of their burrow, over which the animal must pass in entering or leaving the den.

We have alluded to the sporting of the otter, and may now remark that its disposition in this respect is singular and interesting. Their favourite sport is *sliding*, and for this purpose in winter the highest ridge of snow is selected, to the top of which the otters scramble, where, lying on the belly, with the fore-feet bent backwards, they give themselves an impulse with their hind-legs, and swiftly glide head-foremost down the declivity, sometimes for the distance of twenty yards. This sport they continue, apparently with the keenest enjoyment, until fatigue or hunger induces them to desist.

In the summer this amusement is obtained by selecting a spot where the river-bank is sloping, has a clayey soil, and the water at its base is of a considerable depth. The otters then remove from the surface, for the breadth of several feet, the sticks, roots, stones and other obstructions, and render the surface as level as possible. They climb up the bank at a less precipitous spot, and starting from the top slip with velocity over the inclining ground, and plump into the water to a depth proportioned to their weight and rapidity of motion. After a few slides and plunges the surface of the clay becomes very smooth and slippery, and the rapid succession of the sliders show how much these animals are delighted by the game, as well as how capable they are of performing actions, which have no other object than that of pleasure or diversion. This amusement is so congenial to the frolic spirit of boyhood, that in vicinities where otter slides are found, youngsters while bathing sometimes take possession of one, and sitting at the top glide thence with great glee into the water, in imitation of the disports of the otter.* But not recollecting that the skin of the otter is protected by a thick and fine fur against the

* "We had an opportunity of seeing on the ice of Boyer Creek a considerable number of the tracks or paths of otters; they were the more readily distinguishable from there being snow of but little depth on the ice, and they appeared as if the animal was accustomed to slide in his movements on the ice, as there were in the first place the impressions of two feet, then a long mark clear of snow for the distance of a yard or more, then the impressions of the feet of the animal, after which the sliding mark, and so on alternately. These paths were numerous, and passed between

effects of friction, the poor lads find, on relinquishing their play, that, notwithstanding the apparent smoothness of the slide, the fine sand mingled with the clay has robbed them of a broad surface of cuticle, the loss of which experimentally convinces them, before they can limp home, that an otter slide, in the end, is not altogether well suited for the recreation of human bathers.

The American otter is about five feet in length, including the tail, the length of which is eighteen inches. The colour of the whole of the body, (except the chin and throat, which are dusky white) is a glossy brown. The fur throughout is dense and fine.

The differences between this species and the European otter are thus pointed out by Capt. SABINE. "The neck of the American otter is elongated, not short, and the head narrow and long in comparison with the short broad visage of the European species; the ears are consequently much closer together than in the latter animal. The tail is more pointed and shorter, being considerably *less* than one half of the length of the body, whilst the tail of the European otter is *more* than half the length of its body."

The fur of the otter is much valued by the hatters and other consumers of peltries, and as the animal is hunted at all times without any regard to the preservation or increase of the species, it must ultimately become as rare in North America as the kindred species has long since become in Europe.

---

the bank and a situation where a hole had been in the ice, now frozen over."—Long's Exped. to the Rocky Mountains, vol. i. p. 455.

Species II.—*The Sea Otter.*

Lutra Marina; Erxl.

Lutra Marina, Kalan: Nov. Com. Petrop. ii. p. 367.
Castor Marin: Hist. Kamtschatka, p. 444.
Mustela Lutris: L. Gmel. p. 92.
See Biber, oder See Otter: Steller, Kamtschatka.

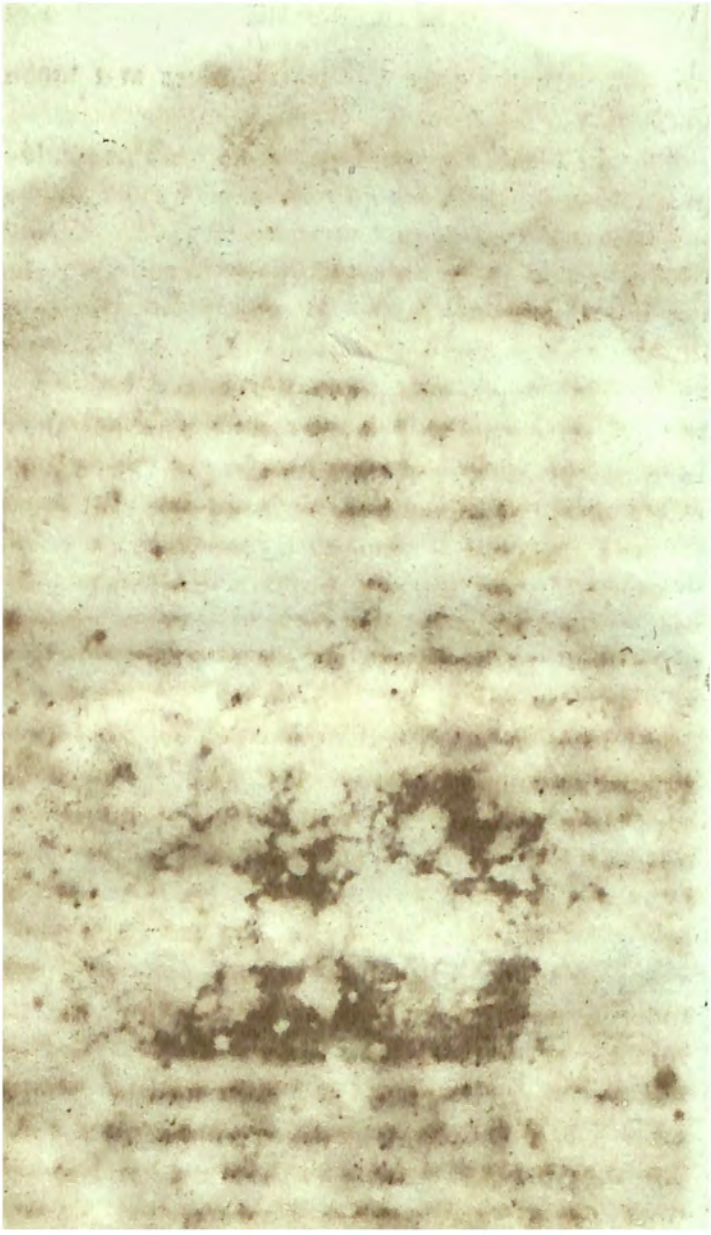
This animal is very interesting on account of its habits and manners, the peculiar beauty, fineness and value of its fur, and from the singular circumstance of the comparatively narrow limits within which the species is restricted. The sea otter spends the greater part of its life in the ocean, where it is abundantly supplied with food, and to all appearance there is nothing to prevent it from roving wherever inclination or curiosity invites; yet the species is exclusively resident within the 49th and 60th degrees of north latitude, and from the 126th degree west longitude to the 150th east from London, on the north-eastern coasts and seas of North America, and on the shores of Kamtschatka and of the islands lying between the two continents.

The sea otter when full grown is about the size of a large mastiff, and weighs from seventy to eighty pounds. In general appearance there is a considerable degree of resemblance between this animal and the seal, especially in the flat and webbed feet of the hinder extremities. It is always found on the coast, or in the immediate vicinity of the salt water, and in tempestuous weather seeks shelter among the weeds which are collected in great quantities in many parts of the seas it inhabits. Its food is vari-

W.W.Wood . Del.

F. Kearny Sc

1 Sea Otter. 2 American Otter.



ous, but principally cuttle-fish, lobsters and other fish.

The sea otter, like most other animals which are plentifully supplied with food, is entirely harmless and inoffensive in its manners, and might be charged with stupidity, according to a common mode of judging animals, as it neither offers to defend itself nor to injure those who attack it. But as it runs very swiftly and swims with equal celerity it frequently escapes, and after having gone some distance turns back to look at its pursuers. In doing this it holds a fore paw over its eyes, much in the manner we see done by persons who in a strong sunshine are desirous to observe a distant object accurately. It has been inferred that the sight of this animal is imperfect; its sense of smelling however is said to be very acute.

The female sea otter brings forth on land after a pregnancy of eight or nine months, and but one at a birth; the extreme tenderness and attachment she displays for her young are much celebrated. Before the cub can swim she is observed to play with and fondle it in various ways; sometimes she carries it about, holding it carefully in her mouth; at other times is observed to play with it by throwing it up into the air and catching it between her fore-paws; and before the young otter has learned to swim, she carries it in her arms, swimming about on her back. Nothing but death can induce the parent to relinquish her offspring, and instances are related of the sea otter pining and dying in the vicinity of the spot where her young has died or been killed. The young continues with the dam until it becomes old

enough to seek a mate, and after pairing, the male and female are very constant to each other, their union not being disturbed by the wanderings of either party. Sea otters swim on their backs, their sides, and sometimes as if placed upright in the water, and they are frequently observed in this attitude, as if embracing and caressing each other, or engaged in play.

The method of capturing the sea otter is commonly that of placing a net among the sea weed; occasionally they are hunted with two boats, by means of which the animal is soon tired down, being unable to remain a very long time under water: they are also killed by clubs or spears when they are found asleep upon the rocks. The flesh is eaten by the hunters, but its qualities are very differently represented; some have stated it to be tender, juicy, and flavored like young lamb, and by others it is declared to be hard, insipid, and tough as leather; this variance we suppose to arise from the different ages of the individuals eaten, the young being doubtless tender and delicate, and the old being tough and unsavory.

The length of the sea otter, (including the tail, which is ten or twelve inches long,) is about five feet, and the whole of the body appears to vary but little in thickness. The upper jaw is long and considerably broader than the lower; the ears are not an inch long and are pointed, thick and fleshy, stand erect, and are covered with short hair. The fore legs are very short, thick and covered with fur, having five broad toes covered with short hair, and joined by a membrane. The hind feet, which we have stated to bear much resemblance to those of the

seal, have a strong and larger membrane between the toes, which is somewhat like the shark skin called shagreen; on the outside of the external toe there is a skin skirting it, analogous to what is seen in some water fowl.

The colour of the sea otter when in full season is perfectly black, at other times of a uniform dark brown. When the fur is opened it is of a lighter colour than on the surface, and intermixed with the fur are some longer, black and shining hairs, which greatly increase the beauty of the pelage. In some individuals the fur about the ears, nose and eyes is of a lighter colour, sometimes brown. The young are sometimes of a cream colour, with white about the nose, eyes and forehead. The fur of the young animal is not equal to that of the adult, which is unrivalled for richness and beauty. The prices at which they have been sold in China appear enormous, from seventy to a hundred rubles having been given for a single skin.

CHAPTER XIV.

Genus XV. Dog; *Canis*, L. C.

Gr. Κυων.	*Dutch*, Hond.
Ger. Hund.	*Ital.* Cane.
Fr. Chien.	*Span.* Perro.
Russ. Pes, Sobaka.	*Port.* Caõ.

GENERIC CHARACTERS.

The face is prolonged and the naked glandulous part of the nose rounded; the cheeks are somewhat elevated, the tongue smooth, and the ears (in the wild animals) erect and pointed. The teats are in the greatest number of instances placed in part on the belly and in part on the chest. On the fore feet there are five, and on the hind feet four toes, armed with strong, slightly curved nails, which are not retractile.

Frederick Cuvier remarks that the animals of this genus may be considered in point of carnivorous regimen, as standing between the glutton and skunk, but nearer the former than the latter. We have seen that the appetite for animal food, or the disposition to feed upon flesh, diminishes both in proportion to the increased numbers of tubercles, and the augmented thickness of the carnivorous teeth, which in undergoing this change proportionally loose their trenchant character.

Dental System.

42 Teeth:

- 20 Upper
  - 6 Incisive
  - 2 Canine
  - 12 Molar.
    - 6 False Molar
    - 2 Carnivorous
    - 4 Tuberculous.
- 22 Lower
  - 6 Incisive
  - 2 Canine
  - 14 Molar.
    - 8 False Molar
    - 2 Carnivorous
    - 4 Tuberculous.

In the upper jaw the number, proportion and respective situation of the incisive teeth resemble those of the marten, but in their forms they have characters peculiar to themselves; they are *trilobed*, having a principal middle lobe and two smaller ones on each side; their internal surface is not divided by a transverse groove, but is bordered by a crest or spine, which rises upon the edges of the two small lobes, and by reuniting at the commencement of the root, forms an angle varying in acuteness in different individuals. The canine teeth also resemble those of the marten, and the false molars exhibit an equal similarity, except that they are separated by a vacant space from the canine, and the two last have their posterior part prolonged into a very evident spur, formed by a particular lobe separated from the principal one by a groove. The carnivorous is entirely like the analogous tooth of the marten: its principal part is divided into two lobes, an anterior, which is larger and more pointed, and a posterior, which is more trenchant, and presents on its internal surface anteriorly only a very small blunt or rounded tubercle, according to the species. The first tuberculous tooth is very large, and its external is larger than the internal part, by which it is dis-

tinguished from that belonging to the marten. On its external face it has two pointed tubercles, bordered externally by a spine; in its middle there are two small eminences which appear to be connected with the exterior spine, and between these and the tubercle on the external face there is a broad and deep depression; finally, the internal face, which is rounded, has on it a spine, which marks its outline, and terminates in a groove that separates it posteriorly from the eminences before mentioned. Between these eminences and this last spine is found a second well marked depression. The second tuberculous tooth resembles the one we have described, only that it is more than one-third smaller.

In the lower jaw the incisors are merely bilobed, and the lobe nearest to the canine is one-half larger than the other. The canine does not at all differ from that of the marten. After a vacant space come four false molars; the first is merely rudimental, and the three others, which have all the characters of these teeth, do not differ from each other, except that they increase slightly in size, from the second to the fourth, and in having their posterior part divided by two serrations. The anterior part of the carnivorous resembles the analogous tooth of the cat; its edge is trenchant and divided in its middle by a groove into two parts, but the anterior is less elevated than the other, and we find at its base interiorly, and rather at the back part, the little pointed tubercle which we have mentioned in describing the dentition of the marten. Its posterior part is a spur, which is principally composed of two obtuse tubercles, one on the outside and the other on the inside. The first tuberculous is twice as long as

it is broad. Its anterior part is composed of two tubercles, one below and the other on the outside, the posterior consists of a spur edged by an irregular spine. The second tuberculous tooth is very small, circular, and composed of two small tubercles, and is surrounded, especially on the inside, by a small spine.

In their reciprocal position the relations of these teeth, as to the incisor, canine and false molars, are such as we have heretofore described. The internal tubercle of the superior carnivorous fills the space which separates the fourth false molar and the inferior carnivorous. The external face of the anterior part of the latter is found in relation with the internal part of the posterior surface of the opposite tooth, and the spur of the first tuberculous fills the vacuities of the opposite tuberculous tooth, and these in turn occupy the vacuities on the spur of the lower carnivorous. The first part of the lower carnivorous fills the vacuity which exists between the two superior tubercles, and the second pair of tubercles of this first tooth is in opposition with the second lower tuberculous, which appears to be merely rudimental and without function.

The species belonging to this genus are endowed with very acute senses, especially of sight, smell, and hearing. Their food varies accordingly to circumstances, and is composed wholly or in part of animal matter, either recently killed, or in a putrid state.*

---

* Illis omnibus penis nodosus est, quo pacto, cohærent copula junctis. Secundum Clariss. Linnæi verba, "gravida

Were we desired to propose a creature fit to be an emblem of incorruptible fidelity, unwavering friendship, forbearing and enduring affection, combined with all that renders gratitude commendable, and honesty of high value, we know not one more worthy to be thus distinguished than the dog, which, under all circumstances of adverse or prosperous fortune, adheres with untiring and zealous vigilance to the cause of his master, being ever ready to lay down his own life in defence of him he has chosen to serve and obey. Without the co-operation of this highly gifted quadruped, how could man have opposed the noxious animals by which his path was beset, or his dwelling surrounded? In those dreary regions of the earth, where the face of nature wears a veil of almost perpetual gloom, and the wretched wanderers of the human family are forced to maintain a perpetual struggle against the combined severities of cold and famine, how much more abjectly miserable would their condition be, had not nature endowed this animal with the disposition to seek the society of man, despite of all the sufferings incident to his poverty, and all the injuries inflicted through his barbarity or neglect.

We have to regret, however, that the good mankind derives from the faithful services of this animal, is closely connected with the possibility of receiving from it the most terrible of evils, as if nature could not operate without balancing or antagonizing every

---

lxiii. diebus parit, sæpe iv. ad viii: masculis patri similibus, femineis matri."

thing by its opposite. It is the dog kind that from time to time inflicts on our race a malady, perhaps the most agonizing and horrific to which humanity is liable, from whose aspect or endurance the stoutest hearts and best regulated minds shrink away in terror. Against this dreadful disease the resources of medicine have hitherto proved inadequate and unavailing, and though we continue to hope that the augmentation of power which medicine is daily acquiring through the zeal of its cultivators may ultimately triumph over this afflicting disorder, experience teaches us how much cause there is to fear that many must still perish before a remedy can be found.*

An examination of dogs bred in long civilized countries will speedily convince us of the impossibility of arriving, through them, at any satisfactory conclusion as to the source or origin of the species, because the influence of domestication and intermixture of races has produced changes and varieties so numerous and interminable as to set at defiance the most scrutinizing and indefatigable research. But if we visit the regions where man has long remained almost entirely stationary, and is still under the go-

---

* A dog which has bitten any person, and is supposed to be mad, should *not* be immediately killed, but securely confined, in order that the madness may be positively ascertained. There is no reliance to be placed on any other preventive treatment than the immediate and perfect excision of the part bitten, or the removal of the poison by sucking the wound forcibly and for a considerable time. Expe-

vernance of few other feelings than those relating to his animal wants, we shall find the dog, though long domesticated, continuing to exhibit as much of peculiar and specific character as if yet in the wild state.

The inhabitants of the northern parts of this continent, and of the north of Asia, have for ages beyond the memory of man employed dogs as beasts of burthen, or for draught: the dogs thus used by the Eskimaux, as well as those kept about the lodges of our southern and western Indians, retain so much of the external appearance and general carriage of the wild animal, as to leave no question of their descent from the same stock as the wolf residing in the vicinity, and do not appear to be distantly removed from that species, however long they may have been in the service of man.

Notwithstanding the endless varieties produced by the causes first referred to, and the fact that between the dog and wolf there are striking external differences, yet they actually constitute but one *natural* group, of which the individuals should be regarded as *varieties* rather than *species*, because they may all be indiscriminately bred together, in such a manner as to result in new and prolific races, bearing but slight resemblance to the parent individuals, and exhibiting new modifications of external characters, of mental qualities, and of internal configuration.

---

dence leads us to believe that the excision of the bitten part at any time, before the general symptoms of the disease have appeared, will avert the disease.

This is the best, and perhaps the only sufficient test of the appropriateness of specific subdivisions, formed in what is called systematic natural history, and affords the most satisfactory proof of the *natural* alliance of various portions of the animal kingdom. Wherever we find one race of animals capable of having its peculiarities entirely obliterated by intermixture with another, and the altered offspring is as prolific as the parent stock, we may feel certain that such races are but varieties of a natural family, however they may be arranged in arbitrary nomenclatural catalogues. We have heretofore adverted to the fact, that there is a law of nature, shown by the prolonged experience of ages to be invariable, which is, that although two species of the same genus may produce offspring partaking in great degree of the qualities of both parents, yet that offspring is sterile and unproductive, thus opposing an impassable barrier to the confusion of species which would inevitably result, were these mule or hybrid beings capable of continuing their race. The converse of the proposition is equally true; animals of the *same* species, however dissimilar in external character, habits, or manners, are capable of breeding with varieties of their own species in illimitable progression, and every successive crossing of breed may result in new modifications of form and in improved physical and intellectual conditions. In domestic economy this has been carried to the greatest extent in the improvement of animals raised for various purposes of utility or luxury, especially in the instance of horses, cattle, sheep, swine, poultry, &c.

In proof of the *specific* identity of the wolf and dog we may here introduce the following very interesting account of a tamed wolf, given by FREDERICK CUVIER, one of the most distinguished scientific naturalists of the present age, and perhaps second to no man, but his illustrious brother, the acknowledged Coryphæus of Zoologists throughout the world.

This wolf was brought up like a young dog, and became familiar with every person whom he was in the habit of seeing, followed his master everywhere, appeared to suffer much from his absence, obeyed his voice, always exhibited the most entire submission to his commands, and in fact differed in no respect from the tamest domestic dog. When his master set out upon his travels, this wolf was presented to the menagerie at Paris, and there, shut up in his den, he remained for many weeks without showing any signs of gaiety, and almost refusing to eat. From this state of depression he gradually recovered, attached himself to his keepers, and had apparently forgotten all his former attachments when his master returned after an absence of eighteen months. At the first word which he uttered, although he was surrounded by a crowd, and could not be seen by the animal, the wolf instantly recognized him and expressed his joy by his movements and cries, and when set at liberty exhibited all the fondness that is commonly expressed by a dog after a separation of a few days, almost overwhelming his old master with caresses. In a short time he was left as before in the menagerie, and again evinced the deepest distress at the absence of his master, but in

time resumed his vivacity. After an absence of three years his master visited him in the evening, when the den was shut up, and there was no possibility that the wolf could discover him by sight; but the moment he heard the voice, he recognised, and responded to it by cries expressive of the most impatient anxiety to approach his master. As soon as the door was opened his cries were redoubled, he rushed forward, placed his two fore-feet on the shoulders of his old friend, licked every part of his face, and threatened his keepers with his teeth for venturing to approach, though an instant before he had testified to them the warmest affection. When his master was under the necessity of again leaving him, the poor wolf became sad and immoveable, refusing all sustenance; he pined away, his hairs bristled up, and in eight days' time he was scarcely to be known by those who had previously seen him. It was expected that he would die; however, he eventually recovered, resumed his healthy condition and glossy coat, but his keepers dared no longer to approach him; he would not endure the caresses of any one, and answered strangers only by threats of injury.*

It is nevertheless true, that occasional and apparent exceptions to the great law of nature heretofore stat

* In the year 1800, a full grown she-wolf that had been caught in a trap was brought to the Royal Menagerie. This animal became so tame as to live among the dogs, and produced with them repeatedly. She barked as they did at all strangers, and so far laid aside her carnivorous disposition as to offer no injury to the poultry, to which she had free access

ed are on record; but granting them the fullest force, they are few and mere exceptions, which, by their singularity and rareness, confirm rather than disturb the stability of the general rule. If the united experience of all observers throughout the world, during a period of three or four thousand years, cannot produce more than two, three, or four instances of exception, of which number few or none are adduced in any other than a "questionable shape," we need nothing better to show that this law is as old as nature herself, and must continue to operate in the same manner until time shall be merged in eternity.

We shall not enter into any farther discussion of the circumstances which may have led to the production of many of the permanent varieties to be found among animals, of which the (so called) species are capable of producing prolific offspring together. We know that, in their wild state, similarity of instinct and mode of life is sufficient cause for the association of races with individuals having similar peculiarities, and this preserves the characters of the race from change or deterioration during an indefinite lapse of time; but circumstances occasionally place animals, apparently of different species, together at times when they are under the influence of an imperious necessity, and the result is the commencement of a new race, which, by subsequent association and multiplication with each other, may present such a permanence of external characters as to induce observers to consider them as specifically distinct from all others.

The breed of dogs produced from the wolf and varieties of the domestic dog, during a considerable

succession of generations, is characterized by a marked predominance of the qualities inherited from their savage progenitors, in the keen and vivid expression of the eye, ferocity of disposition, and severity of their bite. It is impossible, however, without a fuller and more authentic history of the dog from the earliest day to the present time than we possess, to decide by what combinations all the different varieties have been produced. That such changes are still going on among these animals daily observation proves; and we have ocular demonstration that the most curious of these varieties may propagate its kind with others, which, if external characters were to be relied on, might be considered radically and specifically distinct. The domestic dog and wild fox breed together, but there is every reason to believe that the offspring are true *mules*, or incapable of continuing their kind.

Species I.—*The Domestic Dog.*

Canis Familiaris; L.

The dogs of the Eskimaux and other aboriginals of this continent differ much in size and colour, yet they are all of a breed, apparently intermediate to the wolf and the fox. They have sharp noses, pointed and erect ears, and long bushy tails, which are most commonly carried over the back and curled toward the left side. They are strong, fierce, and courageous, biting with so much vigour and keen-

ness, that the smallest of them, when he can get into a corner, is able to keep several large European dogs at bay.

These dogs serve the Eskimaux, and the traders to the snow covered countries of the North, instead of horses and other animals, and though at first view they may appear inadequate to the task of drawing heavy burthens for great distances, yet on a closer examination we shall perceive that they are better adapted for such service in those regions than any other quadruped. In the first place, the ground during great part of the year is deeply buried in snow, and the slight vegetation is beyond the reach of any animal not taught by necessity how to remove the snow with its feet, even if a sufficiency of food were then to be obtained. To employ in such countries the animals commonly used for draught, it would be necessary to make up the lading chiefly of provender for their support; and their own weight would speedily fatigue and disable them, on account of their repeatedly sinking into the snow, on which the crust is generally too thin to bear a large animal. But the dog is not only light and strong, and can draw a sledge or slide carrying a considerable weight, but, in consequence of his carnivorous regimen, can live on the offal of the provision on which his driver subsists; to this may be added the fact, that the facility of procuring flesh is far greater in those countries than almost any other substance. We need not feel surprised that the European and American traders should have uniformly adopted the modes of travelling used by the aborigines, or have substituted their simple conveyances for the

more artificial though less appropriate European vehicles.

In the country north of Hudson's Bay these animals are employed by the Indians and traders to draw their furs and other baggage, though the Indians are frequently too indolent to be at the trouble of making sledges, and then the women are under the necessity of placing a part of their load upon the dogs, which they do by lashing their tents, kettles, and other utensils, on the backs of the animals, as is usually done with pack-horses. In the fall of the year and beginning of winter the squaws sew the skins of deer legs together in the shape of long portmanteaus, which, when hauled on the snow as the hair lies, soon become quite slippery, and answer very well instead of sledges while travelling over the open country.

The sledges made by the northern Indians vary in size, accordingly as they are designed for women or the dogs. Occasionally they are used as long as twelve or fourteen feet, and from fifteen to sixteen inches wide; but the common length is eight or nine feet, and the breadth from twelve to fourteen inches.

These sledges are made of boards, which are not more than a quarter of an inch thick, and from five to six inches wide. As the Indians have no other tool with which to fashion them boards than a common knife, slightly turned up at the point, they sew the boards together with thongs made of parchment deer skin; and on the upper side several cross bars of wood are lashed, which serves to increase the strength of the sledge, and secure the ground-lash-

ing, to which the load is always fastened by small strips or thongs of leather.

The fore part or head of the sledge is turned up, so as to form a semicircle of at least fifteen or twenty inches in diameter, which prevents it from plunging into light snow, and enables it to slide over the snow-drifts and solid projections. The dogs are harnessed to these vehicles by traces of raw hide, which are fastened to leathern collars round their necks. They are generally harnessed two abreast, and the whole number attached to a sledge is commonly five; the foremost or leader being always, if possible, a well broken and long trained dog.*

These faithful and invaluable drudges are treated with shameful neglect and cruelty both by the Indians and the scarcely less savage Voyageurs or Engagées employed in the fur trade. They not only flog them unmercifully, and vent all their ill humour upon these suffering quadrupeds, but overload, overdrive, and starve them most barbarously. In consequence, these poor animals are almost always in wretched plight, and their dispositions rendered so ferocious and irritable as to keep them, whenever they halt on a march, continually worrying and teasing each other. The consequences are sometimes severe to the Voyageurs, for occasionally a team of dogs, when unobserved, takes off at full speed in chase of some animal with a view of running it down, and either dash with their sledge so furiously against stones, trees, &c. as to break it and lose the

* See Hearne's Journey to the Northern Ocean.

lading, or they escape so far as to be entirely lost to their unworthy drivers.

The sledges of the Eskimaux* are exceedingly various in their forms, and in the materials of which they are composed, scarcely two of them resembling each other. The best of these vehicles are made from the jaw-bones of the whale, sawed to about two inches in thickness, and from six inches to a foot in depth. These bones form the runners, and are shod with a plank of the same substance: pieces of bone, wood, or deer's horn, are lashed across within a few inches of each other, to connect the side pieces, and these yield to any great strain which the sledge receives. The upper part of the sledge is generally twenty inches broad, but as the runners lean inwards, the breadth is somewhat greater at the bottom. The weight of these bone sledges is very great; one of moderate length, or not more than ten or twelve feet long, weighed 217 lbs.

In the coldest part of the winter the skin of the walrus is very frequently used for runners, and when frozen stiff answers very well, being more than an inch in thickness and exceedingly tough. The Eskimaux have another ingenious contrivance to make runners, which is to case earth and moss in seal skin, and by pouring in some water a hard bolster is easily formed. The sticks, bones, &c. are placed across the upper part of the runners, as before mentioned, and the surface that is to move upon the snow is

* All the facts here stated relative to the Eskimaux sledges and dogs are from the "Private Journal of Capt. G. F. Lyon, R. N."

covered with ice by mixing snow with fresh water and allowing it to freeze on the runner, which enables the sledge to slide along with great facility. An Eskimaux who owns but one or two dogs, sometimes drives them in a little tray made of a rough piece of walrus hide, or a flat slab of ice hollowed to resemble a bowl. Boys are often seen to divert themselves by yoking several dogs to a small piece of seal skin, sitting on which they hold by the traces. They then dash off at full speed, and the one who sustains the greatest number of bumps before he relinquishes his hold is the cleverest fellow.

The following spirited description of Eskimaux sledge travelling, we give in the words of Capt. Lyon, whom we are always happy to have an opportunity of quoting. "Our eleven dogs were large and even majestic looking animals, and an old one of peculiar sagacity was placed at their head by having a longer trace, so as to lead them through the driest places, these animals having such a dread of water as to receive a severe beating before they will swim a foot. The leader was instant in obeying the voice of the driver, who never beat, but repeatedly called to him by name. When the dogs slacked their pace, the sight of a seal or bird was sufficient to put them instantly to their full speed, and even though none of these might be seen on the ice, the cry of a seal, a bear, a bird, &c. was enough to give play to the legs and voices of the whole pack. It was a beautiful sight to observe the two sledges racing at full speed to the same object, the dogs and men in full cry, and the vehicles splashing through the holes of water with the velocity and spirit of rival stage coaches.

There is something of the spirit of professed whips in these wild racers; for young men delight in passing each other's sledges, and jockeying the hinder one by crossing the path. In passing on different routes, the right hand is always yielded, and should an inexperienced driver endeavour to take the left, he would have some difficulty in persuading his team to do so. The only unpleasant circumstance attending these races is, that a poor dog is sometimes entangled and thrown down, when the sledge with perhaps a heavy load is unavoidably drawn over his body. The driver sits on the fore part of the vehicle, whence he jumps when requisite to pull it clear of any impediments which may lie in the way, and he also guides it by pressing either foot upon the ice. The voice and long whip answer all purposes of reins, and the dogs can be made to turn a corner as dexterously as horses, though not in such an orderly manner, since they are constantly fighting, and I do not recollect to have seen one receive a flogging without instantly wreaking his passion on the ears of his neighbours. The cries of the men are not more melodious than those of the animals, and their wild looks and gestures when animated, give them the appearance of devils driving wolves before them. Our dogs had eaten nothing for forty-eight hours, and could not have gone over less than seventy miles of ground; yet they returned to all appearance as fresh and active as when they first set out."

The Eskimaux dog bears a considerable resemblance to the English shepherd dog, but is much stronger and broader across the breast, in conse-

quence of the severe labour he is constantly engaged in. A fine dog about equals a Newfoundland dog in size, but the nose is broad like that of the mastiff. Both in winter and summer the hair is very long, but there is a soft downy under covering in cold weather, which is not found in the warm season.

As soon as these dogs can walk they are put into harness, and are soon taught to pull, by their continual efforts to regain their liberty, or to go in search of their dams. When two months old, sometimes eight or ten little ones are harnessed to the sledge along with an old steady animal, where, by dint of repeated and severe beatings, they are at length educated for service. Each dog has his name, which when it is angrily called out, has an immediate effect on the animal. The whip has a lash of seemingly immoderate length, it being from eighteen to twenty-four feet long, and the handle but one foot. The dogs are guided or stopped by throwing this lash on one side or the other of the leader, and by speaking certain words. They are taught to lie down by throwing the whip gently over their backs, and will remain in this position during whole hours.

The weight these animals are capable of moving over the ice or snow is really surprising. Capt. Lyon has seen a walrus drawn along by three or four of them. He found by several experiments that three dogs could draw a man on a sledge weighing one hundred pounds, at the rate of one mile in six minutes; and in evidence of the strength of a well grown dog, his leader drew one hundred and ninety-six pounds singly, and to the same distance in eight

minutes. On another occasion, seven of his dogs ran a mile in four minutes and thirty seconds, drawing a heavy sledge full of men. Afterwards nine dogs drew one thousand six hundred and eleven pounds one mile in nine minutes! The sledge was on wooden runners, neither shod nor iced; had they been iced, Capt. L. thinks forty pounds might have been added for each dog.

The Eskimaux dogs, notwithstanding the intensity of cold to which they are subjected, have no particular breeding season, but their females bring forth their young at any season, seldom having more than five at a litter. These dogs also sleep in the open air, during the coldest weather, without inconvenience. They are very poorly fed, thin, gaunt and savage looking animals; they are remarked to be more insolent and irritable when well supplied with food than in their ordinary half starved condition.

We have examined the observations of the late Professor Barton, relative to the native American or Indian dog, with much interest, and should be very happy to believe that he has thrown light upon the origin of this variety of the species. The facts he adduces are too few, and of too negative a character, to lead to any other conclusion than that the domesticated dog of the Indians bears a closer resemblance to the wolf, or to "a half breed" between the wolf and the fox, than to any other animal. The *conjectures* of the learned Professor, however ingenious, we do not feel at liberty to receive, except as an evidence of the vividness of his imagination. Fortunately for mankind the reign of imagination is rapidly passing, if it have not already entirely passed

away, and the conjectures of the highest authorities are "void, and of none effect" when opposed by facts, and subjected to the scrutiny of common sense.

It is with much pleasure, however, that we witness the feeling with which Dr. Barton replies to the illiberal observations of celebrated European authors, concerning the character of the aboriginals of this continent. As we fully coincide with him on this subject, we give his remarks at full length.

"It is well known how much ingenuity, eloquence and science, have within the last fifty years been employed to respresent the Americans as the degenerated or imperfectly organized children of the earth. To complete the large volume of calumny against these poor people, even the manner in which they treat their dogs is not suffered to pass unnoticed by the historians of the new world. 'Prior to their intercourse with the people of Europe,' says the eloquent Dr. Robertson, 'the North Americans had some tame dogs which accompanied them in their hunting excursions, and served them with all the ardour and fidelity peculiar to the species. But instead of that fond attachment which the hunter naturally feels towards those useful companions of his toils, they requite their services with neglect, seldom feed, and never caress them.'

"It would, I believe, (adds Dr. Barton) be a much easier task to prove that Dr. Robertson was unqualified to write the history of America; to prove that the Indian-Americans are not the inferiors of the people of the old world, in the measure of their intellectual endowments; and to show that more than one-half of the charges which have

been brought against these people, are charges resulting from ignorance, or from systematic zeal, than to prove that the Indians are peculiarly entitled to the character of kind and tender dog-masters. After some attention to this subject, I must candidly confess that I possess not the materials for a satisfying defence of the Indian.* The charges which have been brought against him by the writers whom I have mentioned, will be convictive. But why, in this inquiry, if the historian will condescend to mention the fact and interweave it with his eloquence, should he forget the hardships of the savage life? Where the master labours under a scarcity of food, his servants, the animals which depend upon him for their subsistence, must share in the hardships and the evils of his state. The miserable condition of the Indian dogs, is a necessary result of the miserable condition of the Indians themselves.†"

Captains Lewis and Clark, while on their celebrated expedition, were, on several occasions, under the necessity of subsisting their men upon the flesh of dogs purchased from the Indians. Their prejudices against such food were soon overcome, and they quickly learned to prefer it to the poor fare of

---

* In our opinion no defence is necessary; the treatment of the untutored savage to his dog, is comparatively as good as the treatment of many illiterate Europeans to their own children. The Indian may be cruel and neglectful; more *brutal* than the lower classes of many parts of Europe he cannot be.

† Medical and Physical Journal, vol. i. p. 27.

the Indians, who held the "dog-eaters" in sovereign contempt.*

The Dog of Newfoundland is remarkable for its sagacity, size, strength and beauty, and in external characters differs almost entirely from the Eskimaux and Indian dog. The Newfoundland dog has a broader and more expressive visage, and a blunter nose than either of the dogs yet mentioned, the orbits of his eyes have more prominent superciliary ridges, the ears are broad, soft and pendulous, and the whole body is more robust, and covered with long, soft and glossy hair. On the tail the hair is still longer than on the body and forms a handsome brush, which appears to greater advantage when the animal is in motion, as it is then carried slightly curved upwards at its extremity. The Newfoundland dog is very fond of the water, and swims with great ease; the Eskimaux dog is by no means disposed to enter the water, most probably from experience of the effects of extreme cold on coming out again. The Newfoundland dog is employed with great advantage by the settlers to draw heavily laden sledges, and

* "The dog is unusually small, about the size of an ordinary cur; he is usually particoloured, amongst which the black, brown, white and brindle, are the colours most predominant; the head is long, the nose pointed, the eyes small, the ears erect and pointed like those of the wolf; the hair is short and smooth, except on the tail, where it is long and straight like that of the ordinary cur dog. The natives never eat the flesh of this animal, and he appears to be in no way serviceable to them, except in hunting the elk."—Lewis and Clark, ii. p. 165.

ROYAL ASIATIC SOCIETY LIBRARY BOMBAY BRANCH

1. *Newfoundland Dog* 2. *Eskimaux Dog.*

is an invaluable servant. Of his peculiar sagacity numerous instances are on record, and almost every one has made observations enough in relation to this dog, to render any repetition of such instances unnecessary in this place. He breeds with all the known varieties of the domestic dog, and also with the common wolf.*

Species II.—*The Common Wolf.*

Canis Lupus; L.

When the aboriginal Americans first gave place to European adventurers, and the forests which had flourished for ages undisturbed, began to fall before the unsparing axe, the vicinity of the settler's lonely cabin resounded with the nightly howling of wolves, attracted by the refuse provision usually to be found there, or by a disposition to prey upon the domestic animals. During winter, when food was most difficult to be procured, packs of these famished and ferocious creatures were ever

---

* Scientia naturali multum versato et fide digno viro Sabine, se canem Terræ-novæ cum lupa coire frequenter vidisse dictum est; ex quo nobis ejusdem speciei esse ambos, minime dubitare licet. Tamen, si sciolo aliquo, canem sue etiam coire aliquando tentare, objectum sit; respondendum est, neminiunquam visum cognitumve canem *vere copulari*, aut *speciem* vel suam, vel abnormem ex sue procreare. Genitalia lupi canisque nullo modo inter sese differunt: dentes, viscera, victus, vivendique modus eadem sunt; alter ex altero catulos gignere potest.

at hand, to run down and destroy any domestic animal found wandering beyond the enclosures, which their individual or combined efforts could overcome, and the boldest house-dog could not venture far from the door of his master without incurring the risk of being killed and devoured. The common wolf was then to be found in considerable numbers throughout a great extent, if not the whole of North America; at present it is only known as a resident of the remote wooded and mountainous districts where man has not fixed his abode, nor laid bare the bosom of the earth to the enlivening radiance of the sun.

The common wolf of America is considered to be the same species as the wolf of Europe, and in regard to habits and manners gives every evidence of such an identity. Like all the wild animals of the dog kind, they unite in packs to hunt down animals which individually they could not master, and during their sexual season, engage in the most furious combats with each other for the possession of the females.

The common wolf is possessed of great strength and fierceness, and is what is generally called a cruel animal, tearing the throat of his victim, drinking its blood, and rending it open for the purpose of devouring its entrails. The great strength of its jaws enables the wolf to carry off with facility an animal nearly as large as itself, and makes its bite exceedingly severe and dangerous. Aged or wounded individuals, as well as the hinds and fawns of the deer, sheep, lambs, calves and pigs, are killed by these wolves, and the horse is said to be the only domestic animal which can resist them with success. They gorge with much greediness upon all sorts of carrion

Common Wolf 2 Dusky Wolf

which they can discover at great distances; and where such provision is to be obtained in great plenty, they become very fat and lose their ferocity to a singular degree.

When this wolf has been caught in a trap, and is approached by man, it is remarked to be exceedingly cowardly, and occasionally suffers itself to be beaten without offering the slightest resistance. If a dog be set upon a wolf thus captured, the assault is patiently endured so long as his master is present; but as soon as the wolf is freed from the restraint imposed by the presence of his captor, he springs upon and throttles the dog, which, if not speedily assisted, pays the forfeit of his presumption and temerity with his life. When kept in close confinement and fed upon vegetable matter, the common wolf becomes tame and harmless, but is very shy, restless and timid, expressing the greatest alarm at the approach of a stranger, and striving to escape from observation. The voice of this wolf is a prolonged and melancholy howl, which, when uttered by numerous individuals at once, is discordant and frightful. The period of gestation, &c. in this species is in every respect analogous to that of the common dog.

In the regions west of Hudson's Bay wolves are often seen, both in the woods and on the plains, though their numbers are inconsiderable, and it is not common to see more than three or four in a pack. They appear to be very fearful of the human race, but are destructive to the Indian dogs, and frequently succeed in killing such as are heavily laden, and

unable to keep up with the rest. The males are not so swift as the females; and they seem to lead a forlorn life during the winter, being seldom seen in pairs until the commencement of spring. They bring forth their young in burrows, and though it might well be inferred that they are fiercer at those times than under ordinary circumstances, yet Hearne states that he has frequently seen the Indians take the young ones from the dens and play with them. They never hurt the young wolves, but always replace them in the dens, sometimes painting the faces of these whelps with vermilion or red ochre.*

In the highest northern latitudes which have yet been explored, the wolves are very numerous and exceedingly audacious. They are generally to be found at no great distance from the huts of the Eskimaux, and follow these people from place to place, being apparently very much dependent upon them for food, during the coldest season of the year. They are frequently seen in packs of twelve or more, prowling about at a short distance from the Eskimaux huts, lying in wait for the domestic dog, which they are successful in killing if he wanders so far as to be out of reach of assistance from his master. In one instance two of them rushed upon a fine Newfoundland dog belonging to Capt. Lyon, in the day time, and would have killed him but for the timely interference of his master. Capt. Lyon relates the following singular instance of the cunning of one of these wolves which had been caught in a trap, and, after being to all appearance dead, was dragged on board

* See Hearne, p. 362-3, 8vo. ed.

of the ship:—"The eyes, however, were observed to wink whenever any object was placed near them; some precautions were therefore considered necessary, and the legs being tied, the animal was hoisted up with his head downwards. He then, to our surprise, made a vigorous spring at those near him, and afterwards repeatedly turned himself upwards, so as to reach the rope by which he was suspended, endeavouring to gnaw it asunder, and making angry snaps at the persons who prevented him. Several heavy blows were struck on the back of his neck, and a bayonet was thrust through him, yet above a quarter of an hour elapsed before he died, having completely convinced us that for the future we should not too easily trust to the appearance of death in animals of this description."

Animals exposed to so much suffering from hunger, we may readily believe, are in no way exclusive in their preference of food, and these wolves may be said to feed on every creature they can master, or on the remains of any animal left by the natives.

The common wolf is about four feet and a-half in length, including the tail, which is rather more than a foot long. The height, before, is two feet three inches; behind, it is two feet four inches. The tail is bushy and bending downwards, having upon it hairs upwards of five inches in length.

The general colour of this wolf is reddish brown, intermixed with ferruginous and black; but a great variety is to be observed in the colouring of the wolf as found in the northern, middle and southern regions, exhibiting various gradations from grizzly

white to pure black.* The wolf found in Pennsylvania has more of the reddish brown colour, the hair being tipped with black, but especially so over the fore shoulders and sides.

Species III.—*The Prairie or Barking Wolf.*

Canis Latrans; Say.

Canis Latrans: Say. Long's Exp. to the Rocky Mountains, vol. i. p 168.
A well prepared specimen in the Philadelphia Museum.

This wolf frequents the prairies or natural meadows of the west, where troops or packs containing a considerable number of individuals are frequently seen following in the train of a herd of buffalo or deer, for the purpose of preying on such as may die from disease, or in consequence of wounds inflicted by the hunters. At night they also approach the encampments of travellers, whom they sometimes follow for the sake of the carcasses of animals which are relinquished, and by their discordant howlings, close to the tents, effectually banish sleep from those who are unaccustomed to their noise. According to Say's observation they are more numerous than any of the other wolves which are found in North America.

---

* "The wolves of Florida are larger than a dog, and are perfectly black, except the females, which have a white spot on the breast, but they are not so large as the wolves of Canada and Pennsylvania, which are of a yellowish brown colour." Bartram's Travels in Florida, p. 199.

The barking wolf closely resembles the domestic dog of the Indians in appearance, and is remarkably active and intelligent. Like the common wolf, the individuals of this species frequently unite to run down deer, or a buffalo calf which has been separated from the herd, though it requires the fullest exercise of all their speed, sagacity and strength, to succeed in this chase. They are very often exposed to great distress from want of food, and in this state of famine are under the necessity of filling their stomachs with wild plums, or other fruits no less indigestible, in order to allay in some degree the inordinate sensations of hunger.

This wolf barks in such a manner as to resemble the domestic dog very distinctly; the first two or three notes are not to be distinguished from those produced by a small terrier, but differs from that dog by adding to these sounds a lengthened scream. On account of this habit of *barking*, Say has given the specific name of "latrans" to this wolf, which we prefer to translate for a trivial name, instead of using that of "*prairie* wolf" which is equally applicable to other species.

In confirmation of the sagacity of this wolf we shall quote from Say, to whom we owe all that has yet been made known on this species, some anecdotes respecting it. "Mr. [Titian] Peale constructed and tried various kinds of traps to take them, one of which was of the description called a "live trap," a shallow box reversed and supported at one end by the well known kind of trapsticks usually called the "figure four," which elevated the front of the trap

upwards of three feet above its slab flooring; the trap was about six feet long, and nearly the same in breadth, and was plentifully baited with offal. Notwithstanding this arrangement a wolf actually burrowed under the flooring, and pulled down the bait through the crevices of the floor: tracks of different size were observed about the trap. This procedure would seem to be the result of a faculty beyond mere instinct."

"This trap proving useless, another was constructed in a different part of the country, formed like a large cage, through which the animals might enter but not return; this was equally unsuccessful; the wolves attempted in vain to get at the bait, as they would not enter by the rout prepared for them. A large double "steel trap" was next tried; this was profusely baited, and the whole with the exception of the bait was carefully concealed beneath the fallen leaves. This was also unsuccessful. Tracks of the anticipated victims were next day observed to be impressed in numbers on the earth near the spot, but still the trap with its seductive charge remained untouched. The bait was then removed from the trap and suspended over it from the branch of a tree; several pieces of meat were also suspended in a similar manner from trees in the vicinity. The following morning the bait over the trap alone remained. Supposing that their exquisite sense of smell warned them of the position of the trap, it was removed and again covered with leaves, and the baits being disposed as before, the leaves to a considerable distance around were burned, and the trap

remained perfectly concealed by ashes; still the bait over the trap was avoided."* It was not until a log-trap was used that an individual of this species was caught. This log trap is made by raising one log above another at one end by means of an upright stick, which rests upon a rounded horizontal trigger on the lower log.

The barking wolf is about three feet and a-half in length, of which the tail forms thirteen and a-half inches, exclusive of the hair at its extremity. The ears are four inches long from the top of the head, and the distance from the anterior canthus of the eye to the end of the snout is three inches and three-fourths.

The general colour of the barking wolf is cinereous, or gray intermingled with black and dull fulvous or cinnamon above. The hair is of a dusky lead colour at base; of a dull cinnamon in the middle of its length, and gray or black at tip, being of greater length along the middle of the back than on other parts of the body. The ears are erect and rounded at tip, having the hair on the back part of a cinnamon colour, and dark plumbeous at base, while that on the inside is gray. The eyelids are edged with black; the superior eyelashes are black beneath, and on the superior surface of their tips. The supplemental lid is margined with black brown before, and edged with black brown behind. The iris is yellow, and the pupil of a black blue; upon the lach-

* See Journal of Long's Expedition to the Rocky Mountains, vol. i. p. 168.

rymal sac is a spot of black brown. The face is cinnamon coloured, tinted with grayish on the nose; the lips are white edged with black, and have three series of black bristles. The colour of the head between the ears is an intermixture of gray and dull cinnamon; the colour of the sides is paler than that of the back, and faintly banded with black above the legs, which are cinnamon coloured on the outside, and more distinctly so on the posterior hair. The tail is straight, broad and bushy, of a gray colour, mingled with cinnamon above and black at the tip. The extremity of the trunk of the tail reaches to the projection of the os calcis when the leg is extended.

Different individuals exhibit very considerable variations in colouring, and hence many of the minute markings given by Mr. Say, in the above description, may not be found applicable. He states himself that other specimens which he saw differed much from his first description; one "was destitute of the cinnamon colour, except on the snout where it was but slightly apparent; the general colour was therefore gray, with an intermixture of black, in remote spots and lines, varying in position and figure with the direction of the hair." Perhaps no two individuals could be found exhibiting throughout precisely the same arrangement of coloured markings.

1
2
Drawn by G.A. Leseur
Engd by G.B. Ellis

SPECIES IV.—*The Dusky Wolf.*

Canis Nubilus; SAY.

Canis Nubilus; SAY. Long's Exp. to the Rocky Mountains, vol. i. p. 169. A well prepared specimen in the Philadelphia Museum.

This wolf is more robust in form, and fiercer and more formidable in appearance, than either of those we have described. It is found in the Missouri country, frequenting the same districts as the prairie or barking wolf, but is by no means in equal numbers. It is distinguished from the common wolf by the length of its ears and tail, while it is separated from the barking wolf by its greatly superior size, difference of colour, &c. But little is known of the peculiar habits of this species, though there is no reason for believing that they differ much from those of its kindred species or varieties. It is remarkable for diffusing a strong and disagreeable odour.

The general colour of this wolf is dusky, the hair being ash-coloured at base, then brownish black, then gray, and next black. The proportion of black upon the hairs is so considerable as to impart a much darker colour to the whole animal than is found in the darkest of the barking wolves, but in the general effect a mottled appearance is produced by the gray of the hairs combining with the black of the tips. The gray colour predominates on the lower part of the sides. The ears are short and of a deep brownish black, with a patch of gray hair on the anterior side within. The muzzle is blackish above, and the superior lips, anterior to the canine teeth,

are gray; the same colour extends from the tip of the lower jaw, in a narrow line backwards, nearly to the commencement of the neck. On the under part of the body the colour is dusky ferruginous, with long grayish hairs between the thighs, and with a large white spot on the breast. On the neck the ferruginous colour is very much narrowed, but it becomes broader on the lower part of the cheeks. The legs are of a brownish black, having but a slight admixture of gray hairs, except on the front ridge of the thighs, and the lower edging of the toes, where the gray predominates. The tail is short and fusiform, slightly tinged with rust colour; near the base and at the tip it is black on the upper surface; the end of the tail itself does not quite reach the os calcis. The longer hairs of the back, particularly over the shoulders, resemble a short spare mane.

Length from the tip of the nose to the origin of the tail, 4 feet 3¾ inches.—Length of the trunk of the tail, 1 foot 1 inch.—Ear, from the anterior angle to the tip, 3¾ inches.—From the anterior angle of the ear to the posterior canthus of the eye, 4¾ inches.—From the anterior canthus of the eye to the middle of the tip of the nose, 5½ inches.—Between the anterior angles of the ears rather more than 3 inches.*

* The descriptions of this and the preceding species are given nearly in Mr. Say's words, from the work cited at the head of this article.

SPECIES V.—*The Black Wolf.*

Canis Lycaon; L.

Canis Lycaon; SHREB. Saeugthiere, pl. 89.
Loup noir; BUFF. 9. pl 41.
Black Wolf; SAY, in Long's Exp. to the Rocky Mountains, p. 102, vol. i.

The Black Wolf has been found in the Missouri country, and the British possessions in North America, but not in such numbers as either of the foregoing species. It is not yet satisfactorily established that this wolf is precisely of the same species as the European black wolf, whose scientific name is applied to it. DESMAREST is much inclined to think it a new species, and it is most probable that a close comparison of the two will show differences between them supporting his opinion.

In general appearance, and in the relative proportions of the different parts of its body, this wolf resembles the common wolf, (*C. Lupus*) but in size it is intermediate to the fox and common wolf. The colour of the animal is its most remarkable characteristic, as it is entirely black, without the slightest admixture of any other colour.

In passing through the Missouri country, where this wolf is quite common, Mr. SAY had an opportunity of examining a young black wolf, which was chained near the door at a settler's hut. This individual was one of five which had been taken from the same den; it had become familiar with the family, but was shy towards strangers. It was commonly fed on bread and milk; when fed on meat it became ferocious, and attempted to bite the children.

SPECIES VI.—*The Isatis or Arctic Fox.**

Canis Lagopus; L.

Le Renard Bleu; BUFF. 13, p. 272.
C. Lagopus, Arctic Fox; SABINE, Zool. App. p. 858.
Arctic Fox; PENN. Arct. Zool. 1, p. 48, No. 10.

In the highest northern latitudes which have yet been explored this fox is found in great abundance, and does not come lower than a few degrees south of the polar circle. Vast numbers are annually killed in the Hudson's Bay possessions for the sake of their skins, which at the proper season are covered with a thick and fine coat of hair. This species is also found on all the Arctic islands, and in the northern parts of Asia.

The Arctic Fox is a pretty and an intelligent animal, bearing a considerable resemblance in figure to the common fox, though its head is not so pointed, and it is of smaller size. In its winter dress the soft woolly white hair gives it some similarity to a small shock dog. Its eyes are of a clear light hazel colour, and are bright and piercing in expression; the ears are thickly clothed with hair, short and apparently doubled in, or cropped on the edges. A projecting ruff of hair descends from behind the ears and surrounds the lower part of the face, producing a very pleasing appearance. The legs are

* CUVIER forms a *subgenus* of the foxes, on account of their longer and more bushy tail, more pointed muzzle, nocturnal pupils, less slanting superior incisive teeth, fetid odour and habit of burrowing.

LIBRARY
OF THE
BOMBAY
BRANCH
OF THE
ASIATIC SOCIETY

1

Drawn by T. Landseer

2

Drawn by C.A. Lesueur

Engd by C.B. Ellis

1. *Black Wolf.* 2. *Arctic Fox.*

strong and muscular; the large feet are armed with strong claws, and the toes are covered with hair of considerable length above and below; from this character the scientific name of the animal is made, signifying the hare-footed fox.

It has been stated that the Arctic fox* visits the Hudson's Bay settlements only once in five or seven years. Hearne† remarks on this subject, that there is not one year in twenty in which they are not taken in greater or less numbers at Churchill, and he has known not less than from two to four hundred to be caught each year, for three successive years, within thirty miles of the fort. The Arctic foxes always come along the coast from the north, generally making their appearance at Churchill towards the middle of October; their skins are not in the best condition until November. In the interval they are never molested, and are permitted to feed in the vicinity of the fort until they become almost tame. The large numbers of these animals which visit Churchill river in some years do not come together, as they could not find subsistence enough for one-fourth of them while on the way. When they approach the fort the whale carcasses lying along the shore, and the offal left after boiling out the oil, furnishes them abundantly with food, and detains them about the fort until, by frequent reinforcements from the north, they are increased in such vast numbers as almost to be beyond credibility.

* Pennant from Graham.

† P. 363. All the facts relative to this species in the vicinity of Hudson's Bay are from Hearne.

They are caught in traps, or killed by guns set for the purpose by the Hudson's Bay people, principally during the month of November, though some few are found to remain during the winter. Upwards of forty have been killed in one night within half a mile of Prince of Wales' fort; this, however, is rarely done, except on the first or second night of the season. The main body of the survivors cross Churchill river near its mouth after it is frozen over, and move to the southward, in some years assembling in considerable numbers at York fort and Severn river. It is not known that any of them ever again return to the north.

Their breeding places have not been positively determined, but Hearne states without doubt that they breed during the summer season in every part of the coast they frequent. He has known them to breed near Churchill, and along the west coast of Hudson's Bay, particularly at Cape Eskimaux, Whalecove, and also on Marble Island. They bring forth from three to five whelps at a litter, which when young are almost entirely of a sooty black colour; as the autumn advances the belly, sides and tail, change to a light ash, while the back, legs, part of the face and tip of the tail, become of a lead colour. As the winter commences they grow perfectly white, changing colour last on the ridge of the back and the tip of the tail, on which a few dark hairs are to be found almost at all times.*

The Arctic fox preys upon various small quadru-

* Penis calamo communi similis magnitudine; testes (qui vix conspicui) amygdalis æquant.

peds, such as hares, marmots, lemings, &c. and upon partridges and other birds, as well as their eggs, the carcasses of fish left on shore; and, when driven by necessity, they eat indiscriminately whatever may promise to allay their hunger.* The Arctic foxes which are killed at a sufficient distance from the sea coast are said to be very fit for the table, their flesh being as well flavored as the rabbit on which they feed. But near the sea they devour great quantities of putrid whale flesh and similar matters, which impart a disgusting rankness to their flesh.

These foxes are taken with great facility in traps, and, unlike the wolves, seem to have no idea of the design of such contrivances. They are also occasionally shot while they are feeding together in considerable numbers. This shooting is most successful on moonlight nights, as they lie hid during the day time in the holes among the rocks, or under the hollow ice above the high water mark.

It is singular that these animals will prey upon each other when they find individuals killed, wounded, or caught in traps, as readily as upon other animals, a fact which altogether invalidates the old saying that "dog will not prey upon dog." Hearne informs us that he has known upwards of a hundred and twenty foxes which were caught in traps to be

* "As a proof of what foxes will eat to satisfy hunger, I may mention having examined the stomach of one which contained a mass of rope-yarn and line of the size of the doubled fist; amongst which some pieces of sinnet or plaited stuff were above six inches in length." Lyon's Private Journal, p. 109.

destroyed and eaten by their comrades during a single winter, within half a mile of the fort.

We shall conclude this account of the Arctic fox by introducing the observations Capt. G. F. LYON* made on different individuals which he kept on board his ship during the tedious winter spent by the expedition under Capt. PARRY at the North Georgian islands.

"The Arctic fox is an extremely cleanly animal, being very careful not to dirt those places in which he eats or sleeps. No unpleasant smell is to be perceived even in a male, which is a remarkable circumstance. To come unawares upon one of these creatures is impossible, for even in an apparently sound sleep they open their eyes at the slightest noise which is made near them, although they pay no attention to sounds at a short distance. The general time of rest is during the daylight, in which they appear listless and inactive; but the night no sooner sets in than all their faculties are awakened; they commence their gambols and continue in unceasing and rapid motion until the morning. While hunting for food they are mute, but when in captivity or irritated, they utter a short growl like that of a young puppy; it is a singular fact, that their bark is so modulated as to give an idea that the animal is at a distance, although at the very moment he lies at your feet. It strikes me that nature has gifted these creatures with this kind of ventriloquism in order to deceive their prey as to the distance they

* The name of this excellent observer is inaccurately given as Capt. R. Lyon in p. 197 of this work.

are from them. Although the rage of a newly caught fox is quite ungovernable, yet it very rarely happened that on two being put together they quarrelled. A confinement of even a few hours sufficed to quiet these creatures; and some instances occurred of their being perfectly tame, although timid, from the first moment of their captivity. On the other hand there were some which after months of coaxing never became more tractable. These we supposed were old ones.*

"Their first impulse on receiving food is to hide it as soon as possible, even though suffering from hunger, and having no fellow prisoners of whose honesty they are doubtful. In this case snow is of great assistance, as being easily piled over their stores and then forcibly pressed down by the nose.† I frequently observed my dog-fox, when no snow was obtainable, gather his chain into his mouth, and in that manner carefully coil it so as to hide the meat. On moving away, satisfied with his operations, he of course has drawn it after him again, and sometimes with great patience repeated his labours five or six times, until in a passion he has been constrained to eat his food without its having been rendered luxurious by previous concealment. Snow is the sub-

* "If taken young they are easily domesticated in some degree, but I never saw one that was fond of being caressed, and they are always impatient of confinement." Hearne, p. 366.

† We have seen the domestic dog covering up food with earth in the same manner, first pushing the dirt forward and then pressing it down with the end of the nose.

stitute for water to these creatures, and on a large lump being given them, they break it in pieces with their feet and roll on it with great delight. When the snow was lightly scattered on the decks they did not lick it up as dogs are accustomed to do, but by repeatedly pressing it with their nose, collected a small lump at its extremity, and then drew it into the mouth with the assistance of the tongue.

"On the 19th of December, I was so fortunate as to catch one of these foxes in a trap. He was small and not perfectly white, but his temper was so remarkable that I could not resolve to kill him, but confined him on deck in a small hutch with a scope of chain. The little animal astonished us very much by his extraordinary sagacity, for, during the first day, finding himself much tormented by being drawn out repeatedly by his chain, he at length, whenever he retreated to his hut, took this carefully up in his mouth and drew it so completely after him, that no one who valued his fingers would endeavour to take hold of the end attached to the staple."

Species VII.—*The Black or Silver Fox.*

Canis Argentatus.

Renard Noir ou Renard Argenté, Geoff. Coll. du Mus. Charlevoix, Nouv. France, 3. p. 123.
Renard Argenté: F. Cuvier, Mam. Lithog. livr. 5.
Canis Argentatus: Sabine, Zool. App. p. 657.

Were it not for the copious and beautiful black fur of this species, there would be scarcely a characteristic by which to distinguish it from the common

fox, (*C. Cinereo-argenteus*) to which in all other respects it is strikingly similar. In form and proportions, as well as in gait and expression of countenance, in sports, mode of feeding and exhibition of anger, there is nothing which may not be equally applied to this and the species above mentioned.

The colour of this fox, as its name implies, is a richly lustrous black, having a small quantity of white mingled with it in different proportions on different parts of the body. Individuals vary considerably in this respect; some have no white except at the extremity of the tail, or a few white hairs scattered along the middle of the breast, or else at irregular intervals a sprinkling of solitary white hairs along the sides, which by contrast add to the intensity and brilliance of the black. This last colour is produced by the longer silken hair which forms the great mass of the pelage, and is occasionally tipped with white; there is a grayish silken hair that constitutes the immediate covering of the skin. Over the whole body and tail the hair is long and tufted, on the paws it is short, and on the face still shorter, the colour of the latter being mostly whitish on the fore part; the eyes are of a yellowish tint.*

This fox resembles the kindred species in the unpleasant odour it diffuses, which is in a considerable

---

* "The silver fox is an animal very rare even in the country he inhabits. We have seen nothing but the skins of this animal, and those in the possession of the natives of the woody country below the Columbia falls, which makes us conjecture it to be an inhabitant of that country exclusively. It has a long deep lead coloured fur for a foil, intermixed with long hairs either of a black or white colour,

degree owing to its urine, as well as to a peculiar glandular secretion. After having satisfied its hunger, it hides the remainder of the food, and when disturbed, expresses its anger by growling like a dog. A comparison of the American black fox with the black fox of Europe, may hereafter show differences sufficient to authorize it to be considered as distinct from that species. But until better opportunities of examination are afforded we shall hazard no opinion on the subject. The black fox is found throughout the northern parts of America, and is also obtained in the north of Asia, where it is considered among the richest and most valuable of furs.*

Species VIII.—*The Red Fox.*

Canis Fulvus; Desm.

Renard de Virginie, De Beauvois, Bullet. de Soc. Philom.
Red Fox, Lewis & Clark, vol. ii. p. 159.
Canis Fulvus, Sabine, Zool. App. p. [illegible].

This beautiful fox is found throughout North America, and is the species which frequently has

---

at the lower part and invariably white at the tip, forming a most beautiful silver gray." Lewis & Clark, ii. p. 169.

The *black* fox of Lewis & Clark is Pennant's marten, (*M. Pennantii*,) improperly called *fisher*, described at p. 203 of this work.

* Colle pelli si fanno pellicce bellissime, e ricercatissime ordinariamente il valore di una pelle corrisponde a tanti scudi, quanti ne può la medesima contenere. Le più belle con le teste indicate pellicie si pagano a Costantinopoli sino sei mila piastre. *Ranzani*, tomo 2°, parte 2ª.

been thought identical with the common fox of Europe, to which it bears a resemblance sufficiently striking to mislead an incidental observer. But by the fineness of its fur, the liveliness of colour, length of limbs and slenderness of body, as well as the form of its skull, it is obviously distinguished.

Red foxes are very numerous in the middle and southern states of the Union, and are every where notorious depredators on the poultry-yards. Their haunts are most commonly in exceedingly dense thickets of young pine, where they can scarcely be followed even by dogs.

Like all his kindred species, the red fox is distinguished by the possession of keen senses and great sagacity or craftiness, which enables him almost to bid defiance to traps, while his strength and swiftness of foot render it extremely difficult to capture him in the chase. Once fairly roused by the hounds, this animal dashes off with great speed, and soon far outstrips pursuit, and did he not lose the advantage of his celerity by remitting his efforts, might soon render the exertions of the sportsman nugatory. But the persevering hounds again and again drive him to his utmost speed, and eventually wear him down, though not until a wide extent of country has been traversed, and huntsmen, horses and dogs have suffered severely from fatigue.

The general colour of this fox when in full summer pelage is bright ferruginous on the head, back and sides, but less brilliant towards the tail. Beneath the chin it is white, while the throat and neck are a dark gray, which colour is continued along the anterior part of the belly in a narrower stripe that

passes along the breast. The under parts of the body towards the tail are very pale red; and the anterior parts of the fore legs and feet, as well as the fronts of the inferior part of the hind legs, are black. The tail is very bushy but less ferruginous than the body, the hairs being mostly terminated with black, which is more obvious towards the extremity than at the origin of the member, giving the whole a dark appearance. A few of the hairs are lighter at the end of the tail, but not sufficiently to allow us to state that it is tipped with white.

In summer the fur of the red fox is long, fine, brilliant in colour, and lustrous over the whole body. In winter its length and denseness is considerably increased. The red fox is nearly two feet long and about eighteen inches high: the tail is about sixteen inches long. The peltry is of considerable value, and employed in various ways by the manufacturers.*

---

* We subjoin in this note a description of the *Canis Decussatus*, Geoff. given by Sabine in the work above quoted, as the species is entirely doubtful, and may prove to be a variety of the black fox, (*C. Argentatus*) or a *mule* produced between the fox last named and the red fox. "The cross fox, in comparison with the red, is shorter on its legs, and has a larger and longer body, being altogether a stronger animal. The front of the head is gray, composed of black and white hairs, the latter predominating on the forehead; the ears are large, covered with short, soft, black fur behind, and within by long yellowish hairs; the back of the neck and shoulders are pale, ferruginous, crossed with dark stripes, one extending from the head to the back, the other passing the first at right angles. The rest of the back is gray, composed of black fur tipped with white; the feet are white beneath the

The red fox when caught young may be domesticated to a considerable degree, but it is rendered extremely unpleasant by the fetor of its urine, which very strongly resembles the abominable odour of the skunk, (*Mephitis Americana.*) We have lately had the pleasure of seeing a female red fox in the possession of Dr. BERTON, of Germantown; this animal is very interesting by its playfulness and vivacity. It lives in the same cage, and in perfect harmony with a raccoon, (*Procyon Lotor;*) shows no fear nor enmity towards the dogs of the farm, but always exhibits the greatest delight on being allowed to play with them. All the gestures and movements of this fox are exceedingly similar to those of a small dog, but are performed with remarkable quickness.

A very young whelp of this fox was some time ago brought to the Philadelphia Museum in company with its foster mother, a common cat, which had adopted and appeared to be very fond of it. She continued to nurse the little fox for several weeks, expressing much affectionate solicitude when he

---

under part of the tail, and the adjacent parts of the body are pale yellow; the gray character of the back extends to the upper part of the tail, at the commencement; the rest of the tail is dark above and lighter beneath, being tipped with white. The character of the fur is thick and long. The specimen when set up will stand about fourteen inches high; it is two feet four inches in length, and the tail, which is thick and bushy, is sixteen inches long." The colours are very variable in different individuals, some being very nearly of the colour of the red fox, while others more closely approach the black or silver fox.

wandered from her, notwithstanding the frequent ungrateful bites inflicted by her vicious foundling. How long this singular relation might have continued, or to what result it would have led, is unknown. The fox strayed too far from his cautious nurse, fell from the platform of a tall staircase to the ground, and was killed: the poor cat evinced as much sorrow for her loss as if it had been really her own offspring.

Species IX.—*The Gray Fox.*

Canis Cinereo-Argentatus; Gmel.

Renard Gris: Buffon, Quad. p. 41.
Aguarachay: Azara, Quad. du Paraguay, i. p. 317.
Canis Cinereo-Argentatus: Sabine, Zool. App. p. 657.
Fulvous Necked Fox: Shaw, Zool. Miscel.

The gray fox is very common throughout this country, and is found more immediately in the vicinity of human habitations than either of the other species. It is pursued by our sportsmen with more pleasure than the red fox, because it does not immediately forsake its haunts and run for miles in one direction, but, after various doublings, is generally killed near the place whence it first started.

The gray fox, like all the species we describe, exhibits considerable differences of colour at different ages and in different states of pelage. The length of the head and body is about twenty-four, and of the tail eleven inches. The general colour of the animal is grizzly, becoming gradually darker from the fore shoulders to the posterior

1. Black Fox. 2. Grey Fox.

parts of the back, produced by the intermixture of fulvous hairs with those constituting the mass of the pelage, which are thus coloured; near the body the hair is rather plumbeous, then yellowish, then white, and then uniformly tipped with lustrous black. The front, from the top of the head to the edge of the orbits, is gray, while the rest of the face, from the internal angle of the eye to within half an inch of the extremity of the snout, is blackish; at the extremity on each side of the granulated black tip of the nose it is of a yellowish white. A fine line of black tipped hairs extends upwards and outwards, from half an inch below the internal angle of the eyes until it is intersected by a similar black line about half an inch beyond the external angle of the eye, thus forming a very acute triangle, whose basis is on the side of the face. This blackish gray triangle, joined to the peculiar sharpness of the face, and the line produced by the black whiskers on the sides of the nose, singularly increase the appearance of slyness and cunning expressed in the physiognomy of this animal. The face below this triangle is white, and the latter colour is continued semicircularly upon the upper part of the throat.

The under jaw is blackish, this colour extending along the line of the mouth, and passing about half an inch beyond the junction of the lips at the angle. The inner surface of the ears is clothed with short light yellowish hair; their tips on the outside are blackish gray, and the whole of the rest of their posterior surface is yellow, which colour descends encircling the neck, and is the only colour on the

anterior parts, with the exception of a white spot on the breast. The inferior parts of the body are white, tinted slightly in some individuals with faint reddish brown. The tail is thick and bushy, and the fur on the upper side is pale yellow, slightly tipped with black; the under part is rust coloured, and the end entirely black.

Species X.—*The Swift Fox.**

Canis Velox; Say.

Burrowing Fox: Lewis & Clark, ii. p. 351.
Canis Velox: Say, Long's Exp. to the Rocky Mountains, i. p. 486.

This interesting species inhabits the open plains which extend from the base of the Rocky Mountains towards the Missouri River, and forms its dwelling by burrowing in the soil. It is smaller than any other fox we have described, and is not known to frequent forest countries.

The most remarkable circumstance peculiar to this fox is its extraordinary swiftness, which all who have seen it agree in declaring to surpass that of any other animal with which we are at present acquainted. The fleetest antelope or deer, when running at full speed, is passed by this little fox with

---

* We prefer to translate Say's specific name for the trivial appellation of this fox, rather than adopt the common name of *burrowing* fox, since all the foxes burrow more or less, and the surpassing swiftness of this animal is a much more distinctive attribute of the species.

the greatest ease, and such is the celerity of its motion that it is compared by the celebrated travellers above quoted to the flight of a bird along the ground, rather than the course of a quadruped. Other observers have stated that when in full speed over the plain, the effect produced on the eye makes the animal resemble a line drawn rapidly along the surface, so impossible is it to distinguish any of the parts of its body on account of the surprising velocity of its motion.

Unfortunately for us the notes taken by SAY of the external characters of this animal were lost, and he was obliged to make known the species from nothing but the head and part of the neck of one individual, and the cranium of another. He gives a full account of the peculiarities of the skull of this animal in order to prove its specific distinction from the red fox, (*C. Fulvus*) which we do not think it necessary to repeat in detail, but shall append to this slight notice of the animal his description of the head and skull which were preserved.

"The entire length, from the insertion of the superior incisors to the tip of the occipital crest, is rather more than four inches and three-tenths; the least distance between the orbital cavities nine-tenths of an inch; between the tips of the orbital processes less than one inch and a-tenth; between the insertions of the lateral muscles at the junction of the frontal and parietal bones, half an inch. The greatest breadth of this space on the parietal bones thirteen-twentieths of an inch.

"The hair is fine, dense and soft. The head above is fulvous, verging on ferruginous intermixed with gray, the fur being of the first mentioned colour, and the hair whitish at base, then black, then gray, then brown. The ridge of the nose is somewhat paler, and a more brownish line passes from the eye to the nostrils, (as in the *C. Corsac.*) The margin of the upper lip is white; the orbits are gray; the ears behind are paler than the top of the head, intermixed with black hairs, and the margin, excepting at tip, white; the inner side is broadly margined with white hairs; the space behind the ears is destitute of the intermixture of hairs; the neck above has longer hairs, of which the black and gray portions are more conspicuous; beneath the head is pure white. The body is slender and the tail rather long, cylindrical and black."

CHAPTER XV.

Genus XVI. Cat; *Felis*, L.

Gr. Αιλουρος.	*Lat.* Felis, Catus, Cattus.
Ger. Katze.	*Ital.* Gatto; *Span.* Gato.
Fr. Chat.	*Russ.* Kot; fem. Kotscha.

GENERIC CHARACTERS.

The head is rounded, having a short face and large eyes, of which the pupils open either circularly or vertically. The tongue is covered with horny prickles or papillæ, which have their points turned backwards. The body is long, compared with the length of the legs; the teats are either four in number, and situated on the belly, or three or four on the chest and four on the belly. The anterior feet have five toes, not joined by an intervening membrane; the toes on the posterior feet are generally four in number; all the toes are armed with sharp hooked claws, which the animals have the power of projecting or retracting at will. The tail varies in length according to the species.

Dental System.

30 Teeth:

- 16 Upper
  - 6 Incisive
  - 2 Canine
  - 8 Molar.
    - 4 False Molar
    - 2 Carnivorous
    - 2 Tuberculous.
- 14 Lower
  - 6 Incisive
  - 2 Canine
  - 6 Molar.
    - 4 False Molar
    - 2 Carnivorous
    - 0 Tuberculous.

In the upper jaw the incisors are ranged side by side in a straight line. The two first are of equal size, wedge-shaped and transversely grooved on their internal face; the third is twice as large as these two, pointed and grooved on its internal face. A vacant space separates the last incisor from the canine, which is very large, conical, slightly hooked, rounded on its internal and external face, and angular at its anterior and posterior edges. The first false molar succeeds the canine, and is a small, very obtuse tooth, with a single root. A vacant space separates that tooth from the succeeding one, or second false molar, which we regard as having the regular form; it is very broad, has several roots, broad from before backwards, compressed from within outwards, trenchant, and presenting nearly the form of a right angle; its edges are divided by two grooves, or rather by two serrations, which augment the trenchant power. The carnivorous, which has at least three roots, succeeds the false molar immediately; it is a third larger than that tooth from before backwards, and is in this direction divided into three parts; the first is a small tubercle with cutting edges; the second or middle one presents a large tubercle trenchant on its edges, of a right angled figure; the third is terminated by a nearly straight line, only a little inflected in its middle, and with cutting edges. At the internal face of this tooth, and at the base of the small obtuse tubercle, is a still smaller tubercle, which is connected by a salient point to the middle tubercle. Finally, the tuberculous molar is a very small tooth, very narrow from before backward, broader from the external to the internal side.

rounded, and having one or two roots; this tooth concealed at the base of the carnivorous tooth is entirely rudimental.

In the lower jaw the first incisive is somewhat smaller than the second, and this than the third; they are shaped like blunt wedges, and show a slight groove from before backwards, narrower on the side next to the canine than to the opposite side. The canine, which immediately follows the incisors, is strong, conical, and more hooked than that of the opposite jaw, rounded on its anterior and exterior, and angular at its internal face and exterior edge. A large vacancy separates this tooth from the first false molar, which is broad from before backward, slender from the inner to the outside, with trenchant edges, and having the right angled figure, whose edges are divided by a groove as in the upper jaw. The succeeding false molar does not differ except in being larger and having an additional groove on its posterior edge; both of these teeth are normal. The carnivorous tooth is, like the preceding, compressed from within outwards, having cutting edges; but it is divided into two nearly equal parts by a deep groove in its middle, still more evident on its internal than its external face.

In their reciprocal position the incisors are opposed crown to crown, whence in old animals the grooves of which we have spoken wear away, and as these teeth are alternate, that is, the middle of these teeth in one jaw corresponds with the interval which separates the two opposite incisors, they wear unequally and become pointed instead of remaining

in a straight line. The anterior edge of the upper canine is in relation with the posterior and exterior edge of the lower canine. The superior false molar only fills the void between the canine and the first inferior false molar. The posterior edge of the last named tooth acts against the anterior edge of the opposite false molar; the latter, by its posterior edge, acts upon the internal and anterior face and internal tubercle of the opposite carnivorous tooth. The whole breadth of this tooth is opposed to the external face of the lower carnivorous, which only touches the tuberculous tooth by its basis, or by that part of it which at its posterior part is nearest to the roots.

It will be seen by the number, form and disposition of these teeth, that the jaws of the cat are very short, and that the teeth being situated near the power which moves the jaws, they can act with great force, more especially as the points of articulation of the jaws, or condyles, are on a line with the teeth. The cat is absolutely carnivorous, eating nothing but flesh, and preferring much that of animals recently killed; they do not eat bones, except such as are not very hard, or when strongly pressed by hunger.

Nature having destined the animals of this genus to subsist exclusively on the flesh of other creatures, has endowed them with insatiably blood-thirsty dispositions, and furnished them with the most effective means of destruction. Their muscular strength, especially that moving the jaw, is exceedingly great, and gives their keen lacerating teeth, and strong,

sharp edged, pointed claws, terrific efficacy in the infliction of wounds, while their peculiarly flexible bodies and agility of motion enables them to spring with vast force upon their destined victims. They are sly, insidious and ferocious, approaching their prey by stealth or stratagem, and secure it by a sudden bound, or, failing in their first attempt, sneak off as if ashamed, but in reality because they are not well adapted to succeed in running it down. Most of them climb with great facility, the larger species especially bounding with a few efforts into the tops of lofty trees; all of them (with the exception of one species not found in this country) have their horrid claws entirely concealed in a sheath, and protected from wearing or becoming blunted, unless protruded at the will of the animal when about to strike its prey, or to aid in ascending trees, &c.

Few creatures exist which are destitute of peculiar beauties, either of adaptation or ornament, and it may appear singular to such as examine but slightly, that nature should have been lavish of adornment to a race of animals so generally injurious and hateful, or that the species most remarkable for invincible ferocity and destructive habits should be most eminently beautiful. From the dread monarch of the desert, whose limbs combine every attribute of vigour, and whose tawny mane adds terrific grandeur to his aspect of savage defiance, down to the domestic cat, whose smooth glossy fur and demure countenance might induce a belief in her peculiar innocence, we may observe every degree of beauty connected with fine proportions, graceful

forms and agile movements, clothed with skins most richly variegated; an unequivocal evidence that external ornament is no test of disposition, and that mere beauty should not persuade us that the possessor is therefore excellent.

All these animals are called *cruel*, and their disposition to destroy the lives and drink the blood of other creatures growing out of a physical necessity, has been termed *cruelty*. Such expressions applied to animals are entirely incorrect, because it implies a power of discrimination which we do not believe them to possess. It would be exceedingly cruel in a human being to play with the terrors of an animal about to be put to death, and allow it to make numerous fruitless efforts to escape; yet this act is perfectly natural to the cat, and not more *cruel* than the most ordinary movement, inasmuch as the cat can have no idea of the suffering inflicted.

We must not rashly conclude that these animals are an evil unattended by any utility or good. They are designed by nature to occupy regions where animal life is most likely to increase in undue proportion, and it is their province to keep this increase from becoming excessive. It is in the sultry deserts of Africa and the vast plains of Asia, that the gaunt lion raises his hollow roar, threatening destruction; it is in the jungles of India that the untameable tiger lurks for his prey, and in the dense and remote forests of our own country that the fierce and vindictive cougar utters his startling scream. In all cases their haunts are in the vicinity of numerous herds of animals, whose superabundant increase they are engaged in restraining. They live far retired from the habitations of man, are princi-

Cougar?

pally solitary and nocturnal, and appear to diminish in direct proportion to the advances of the human race, and the extension of cultivation. Hence we find that nature has not in these animals entailed a curse on mankind, which are so circumstanced, that their number may be diminished and their race even finally extinguished, as their services become less required.*

Species I.—*The Cougar.*

(*Improperly called* Panther.†)

Felis Concolor; L.

Felis Concolor et discolor; L. Gmel. Syst. Nat. i. p. 79, Sp. 9-12.
Le Cougar; Buff. Quad. vol. 9, tab. 59; *Cougar de Pennsylvanie et Cougar Noir;* Buff. Supp. 3. p. 41, 42.
Pouma; Garcilasso, liv. 8. chap. 18.
Gouzara; De Azzara, Quad. du Paraguay, vol. i. p. 133.
Felis Concolor et discolor; Temminck, Monog. de Mam. livrais 4, p. 134.

The Cougar is the largest animal of the cat kind found in North America, and has occasionally re-

---

* For the gratification of our readers, we subjoin a note on this genus in the words of Linné, not only the most learned, but one of the most eloquent naturalists whose writings we possess.

"Felis genus sobrium, scandit facile arbores, cursu celer, noctu potissimum speculatur, casu delabitur in pedes contusioni vix obnoxium; glans penis ipsis muricatus retrorsum; retractis unguibus acutissimis incedunt, iisque sæviunt; inhiando sanguinem hauriunt; visa præda caudam movent; vegetabilibus ultro non vescunt."

† There is a great deal of confusion in the books relative to the true *panther*, which Temminck has decided to be the

ceived the name of American lion, from the similarity of its proportions and colour to the lion of the old world. It is very little inferior in size, and not at all in the qualities of magnanimity, clemency, and generosity which have been so lavishly yet so falsely attributed to the "king of beasts," whom we might believe to have been distinguished as royal in derision of some of the human species, who despotically rule over their fellow creatures by virtue of the "right divine" of power.* The cougar

---

Felis Pardus of Linné. The name employed by our country people generally, is "*Painter*," evidently a corruption of Panther. We have deemed it advisable to use the term *cougar* for a trivial name, to avoid the confusion which would be occasioned by that of *panther*, more especially as the former is more generally known and used than that of *puma*, applied by some European naturalists to this animal.

* The "lordly lion" conceals himself near the places where deer and other animals come to drink, and springs upon them from his ambush, like the veriest tom-cat; having feeble sight, and being unfit for the chase, he follows the wild dogs and chacals, which run down buffaloes, antelopes, &c. and when they have succeeded, drives them off and gorges to repletion: as he relinquishes the carcass when satiated he is called *generous;* as he does not attack and devour men—when not hungry, he is considered *magnanimous;* he retires slowly, facing his enemies, being unable to run with speed, and is celebrated for his noble spirit, and as he does not kill the wild dogs and other small animals because—it is not in his power to catch them, he is then called *clement;* while in virtue of his great strength, dreadful claws, horrid teeth and awful roar, he is considered as altogether *royal.* Yet this king of quadrupeds has not half the moral excellence of a poodle dog, nor a thousandth part of the dignity of character possessed by the elephant. He is,

may be stated to be about one-third less in size than the lion, and has no mane nor tuft at the extremity of the tail, which is about half the length of the body and head.

The skin of this animal is clothed with a soft and close hair over the limbs and body, of a brownish yellow colour, or a mixture of red and blackish, with occasional patches of a rather deep reddish tint, which are only remarkable in certain lights, and disappear entirely with the advancing age of the individual. A dark red is spread over all the upper parts, produced by the tips of the hair, which is black at base, and this colour is deeper upon the back, the head and upper part of the tail, than upon the sides. The belly is pale red; the breast, inside of the thighs and legs, are of a reddish white, and the lower jaw and throat entirely white. The ear is whitish internally and black externally, with the exception of the small external lobule, which is reddish gray. The head has a great many gray hairs upon it; the whiskers are white and rise in a blackish space; the end of the tail is black. The round spots varying in size, are more or less distinct according to the age of the individual, and are found in greatest number on the thighs, where they are not

---

moreover, no match for the great tiger of Asia, which, in ferocity, savage daring, audacious destructiveness, unconquerable and inappeasable hatred to mankind, is infinitely more *royal*, and a more consistent emblem of a great number of human *kings* who have aided in various ages and countries to retard the progress of improvement and the march of mind.

so close together. The sexes are not distinguishable by the colour of the pelage.*

The cougar was at an early period distributed in considerable number over the whole of the warm and temperate regions of this continent, and is still found, though by no means abundantly, in the southern, middle and north-western parts of the Union, becoming, however, gradually more rare as the population increases and cultivation is extended. It is a savage and destructive animal, yet timid and cautious: in ferocity it is quite equal to most of its kindred species, and kills numbers of small animals for the sake of drinking their blood, and when pressed by hunger attacks large quadrupeds, though not always with success. When the cougar seizes a sheep or calf, it is by the throat, and then flinging the victim over its back it dashes off with great ease and celerity to devour at leisure; deer, hogs, sheep and calves, are destroyed by the cougar whenever they are within reach, and occasionally one or two of these animals have committed extensive ravages among the stock of the frontier settlers. They climb or rather spring up large trees with surprising facility and vigour, and in that way are enabled, by dropping

* We have chosen to draw up this description from the excellent monography of Temminck, on account of the admirable opportunities he has enjoyed and profited by, of visiting all the rich collections of Europe, especially of Paris, where there is a full series of cougars preserved in the museum. In this city there are very few specimens, and of these a still smaller number fit to furnish materials for a description of extensive application.

suddenly upon deer and other quadrupeds, to secure prey which it would be impossible for them to overtake.

In the day time the cougar is seldom seen, but its peculiar cry frequently thrills the experienced traveller with horror, while camping in the forest at night, or he is startled to hear the cautious approaches of the animal, stealing step by step towards him over the crackling brush and leaves, in expectation of springing on an unguarded or sleeping victim, whom nothing but a rapid flight can save. That the cougar will attack animals of large size and great strength is well known to those who have resided where this beast is found, in proof of which we may here insert a letter received from a scientific friend, who, during twenty-five or thirty years, has resided in the state of Ohio, and made the study of natural history his chief amusement.

Lexington, Ky. March 26, 1826.

DEAR FRIEND,—About the first of December, 1819, I visited Shane's prairie with the view of procuring specimens of every quadruped to be obtained in that district of country. I made early inquiry of SHANE* as to what animals might be

* "We travelled for twelve miles over a swampy country through which the St. Mary flows, after which we struck a dry plain, known by the name of Shane's prairie, and at eighteen miles from Fort St. Mary, we crossed the river at a settlement called Shaneville; both the prairie and the settlement, (which consists of but one family) owe their appellation to an interpreter, who is a half bred Indian; his

collected, and whether it was possible a cougar could be found. On the subject of the cougar he expressed some doubt, but believed that one was still lurking somewhere between Shane's crossing of St. Mary's river and Fort Wayne. This individual, he was of opinion, was the only one which for many years past had resided within his vicinity. He related various anecdotes of the alarm caused to travellers by this animal, especially at the twelve mile swamp, then a common camping ground on the Fort Wayne road. The following is the most interesting:

About the close of the late war, a merchant of Piqua named Herse, received a considerable sum of money in small bills, which made it appear of still greater magnitude to several suspicious looking persons who were present when it was received. Mr. Herse being unarmed, was apprehensive that an attempt would be made to rob him at the camping ground, and expressed his apprehensions to a single

---

father was a Canadian and his mother an Ottawa. He was employed as an interpreter and spy by General Harrison during his western campaigns, and is considered as having acquitted himself of his duties faithfully; on the conclusion of the war he was rewarded by the grant of half a section of land, (320 acres) which he has divided into town lots; he resides within a short distance of Shanesville on part of his grant. No man is better known in this part of the country than Shane; his influence among the Indians is great, and he enjoys a high degree of popularity among the whites, founded upon the uniformly good character which he maintained during the war, and upon the unbounded confidence reposed in him, by General Harrison.—*Long's Expedition to the Source of St. Peters' River.* By W. H. Keating, A. M. vol. i. p. 76.

fellow traveller who was also unprovided with arms. In consequence, they resolved not to go to the camping ground, but to pass the night in the woods without fire; there, turning their horses loose, they lay down in their blankets on the leaves. In the night they were aroused by hearing the horses snort, as they are apt to do on the approach of Indians, and shortly after they were heard to make several bounds through the woods, as if some one had unsuccessfully attempted to catch them. After some time had elapsed they both distinctly heard what they supposed to be a man crawling towards them on his hands and feet, as they could hear first one hand cautiously extended and pressed very gently on the leaves, to avoid making a noise, then the other, and finally the other limbs in like manner and with equal care. When they believed that this felonious visitor was within about ten feet of them, they touched each other, sprang up simultaneously, and rushed to some distance through the woods, where they crouched and remained without further disturbance. A short time after they heard the horses snorting and bounding furiously through the woods, but they did not venture to arise until broad day-light, being still ignorant of the character of their enemy.

When sufficiently light to see, by climbing a sapling they discovered the horses at a considerable distance on the prairie. On approaching them it was at once evident that their disturber had been nothing less than a cougar. It had sprung upon the horses, and so lacerated with its claws and teeth their flanks and buttocks, that with the greatest difficulty were they able to drive the poor creatures

before them to Shane's. Several other instances of annoyance to travellers had happened at the same place, and Shane believed by the same cougar.

I now offered, through Shane, a reward of ten dollars to any of the Indians who would bring in this animal, and a few evenings after, on returning from a day's hunting, I found an Indian waiting with the body of the cougar, which he had killed about two hours before. This Indian found its track about fourteen miles from Shane's, and tracked it to within about two miles of Shane's house, where he was on the point of abandoning the chase. At this moment he heard the bushes rustle, and turning he saw the beast, which had sprung against the body of a tree to observe its pursuer. He instantly fired, and shot him through the heart, as I found on dissecting the animal. The Indian dragged the body about a quarter of a mile on the snow, but finding it too heavy, came to Shane's and obtained a sledge, on which he brought it in.

The following measurements were made by myself on the spot:—Length from the tip of the nose to the root of the tail, 4 feet 5 inches.—Length of the tail, 2 feet 4 inches.—Height before and behind, (toes extended) 2 feet 7 inches.—Circumference immediately before the fore legs, 2 feet 7 inches.—Around the body just before the hind legs, 2 feet 6 inches.—Of the neck, close to the head, 1 foot 5 inches.—Of the wrist, $7\frac{1}{2}$ inches.—Length of the fore leg to the body, $11\frac{1}{2}$ inches.—Of the hind leg in the same way, 20 inches.—Of the head, just before the ears, $20\frac{1}{2}$ inches.—The eyes were brown.

ROBERT BEST, M. D.

This fine specimen was carefully prepared, and is now in the Western Museum at Cincinnati, Ohio. We have been furnished with a drawing of this animal from the pencil of Mr. C. CORWINE, a respectable and promising artist, resident in that city, through the kindness of DANIEL DRAKE, M. D. a gentleman who is not less distinguished by his profound acquaintance with his profession, than for the zeal and liberality with which he devotes himself to the advancement of natural science.

In the remote and thinly settled parts of Pennsylvania the cougar is still occasionally found, and the following relation of the manner in which two of these animals were recently killed, will be read with interest from the singularity of the attendant circumstances. We have the account through our friend ISAAC HAYS, M. D. direct from Mr. JOHN MITCHELL, the respectable gentleman who killed them, and presented their skins and heads to the Philadelphia Academy of Natural Sciences.

About five miles from Philipsburg, Centre County, Mr. Mitchell, on the 8th of December, 1825, shot at a buck (*Cervus Virginianus*) and wounded him in the shoulder. He followed the animal for some time, and at length perceived him at the distance of about forty yards, lying with his heels upwards, and a cougar holding him by the throat. The hunter discharged his rifle at the cougar and shot him through the heart, when this animal relinquished the buck, advanced four or five yards, and fell lifeless. Having again charged his rifle, and believing the panther to be dead, Mr. Mitchell, turning to

wards the wounded buck, was surprised to see another cougar in the act of pulling down the head, and as it now appeared, the buck had been held down by the throat by both cougars at the moment the first was killed. The body of the buck was between the hunter and the second cougar, nothing but the head of which was visible. At this Mr. Mitchell levelled his rifle, and the ball entered it at the angle of the eye. The beast remained still for a few minutes, and then, for the first time, relinquished his hold of the buck and walked over it towards the hunter, who fired his rifle a second time and shot him through in the neighbourhood of the heart. At this moment the buck recovered his legs, stumbled over the body of the cougar, finally extricated himself, and ran off. A third discharge of the rifle pierced the cougar with another ball, yet he still remained on his feet, and it was not until the rifle was again charged and a fourth ball driven through the back part of the under jaw, that the animal fell and expired. What is most singular, is that the male should not have relinquished his hold of the buck when the female was killed, but continued in the same position until the ball entered his own head near the eye.* The buck ran near a mile before

---

* "Major Smith witnessed an extraordinary instance of the abstracted ferocity of this animal, when engaged with its food. A puma [cougar] which had been taken and confined, was ordered to be shot, which was done immediately after the animal had received its food. The first ball went through its body, and the only notice he took of it was by

he was finally overtaken and killed. During his walk home, loaded with the trophies of his success, Mr. Mitchell killed another buck, having, during an absence of four days, killed two cougars and four bucks.

The following account of the destruction of a large cougar, which is still preserved in the New York Museum, was given by the late Mr. Scudder. Two hunters, accompanied by two dogs, went out in quest of game near the Kaatskill mountains. At the foot of a large hill, they agreed to go round it in opposite directions, and when either discharged his rifle the other was to hasten towards him to aid in securing the game. Soon after parting, the report of a rifle was heard by one of them, who, hastening towards the spot, after some search, found nothing but the dog, dreadfully lacerated and dead. He now became much alarmed for the fate of his companion, and while anxiously looking around, was horror struck by the harsh growl of a cougar, which he perceived on a large limb of a tree, crouching upon the body of his friend, and apparently meditating an attack on himself. Instantly he levelled his rifle at the beast, and was so fortunate as to wound it mortally, when it fell to the ground along with the body of his slaughtered companion. His dog then rushed upon the wounded cougar, which with one blow of its paw laid the poor animal dead by its side. The surviving

---

a shrill growl, doubling his efforts to devour his food, which he actually continued to swallow with quantities of his own blood till he fell."—*Griffith's Translation of Cuvier*, p. 438.

hunter now left the spot, and quickly returned with several other persons, when they found the lifeless cougar extended near the dead bodies of the hunter and the faithful dogs.*

SPECIES II.—*The Northern Lynx.*

Felis Canadensis, GEOFF.

Felis Lynx: L. Syst. Nat. p. 83.
Le Lynx du Canada: BUFF. Hist. Nat. Suppl. iii. p. 44.
Lynx du Canada: C. Ossem. Fossiles, Nouv. ed. iv. p. 443.
Gatto Lince: RANZANI, ii. p. 309. sp. 8.
Felis Canadensis: GEOFF. Catal. des Mammif. p. 120.
Felis Canadensis: SABINE, Zool. App. to Franklin's Exped. p. 659.
Felis Borealis: TEMMINCK, Monog. de Mammal. livr. 4e. p. 111.
[Loup-Cervier, Lynx de Suède of the Furriers.]

The researches of the justly distinguished TEMMINCK have reduced the catalogue of lynxes or wild cats inhabiting North America to two species, of which one is common to both continents, and one proper to the American. The species now to be described is found only in the northern regions of both continents.

* These incidents may remind many of our readers of the spirited and highly interesting account given in Cooper's "*Pioneers of the Susquehanna,*" of a combat between a female cougar and a mastiff, which may be referred to with pleasure and advantage, on account of its verisimilitude; a merit by no means common in such works, and more especially in relation to American animals. Nothing can well be productive of deeper disgust to one who has any knowledge of natural history, than the inappropriate and ridiculous re-

1 *Canada Lynx.* 2. *Wild Cat.*

The northern lynx* is a fierce and subtle creature, exhibiting most of the traits of character which distinguish animals of the cat kind. To the smaller quadrupeds, such as rabbits, hares, lemmings, &c. it is exceedingly destructive, never leaving the vicinities they frequent until their numbers are altogether destroyed, or exceedingly thinned. But the ravages of the northern lynx are not confined to such small game; it drops from the branches of trees on the necks of deer, and clinging firmly with its sharp hooked claws, ceases not to tear at the throat and drink the blood of the animal until it sinks exhausted and expires. It attacks sheep and calves in the same manner, and preys upon wild turkies and other birds, which it is capable of surprising, even on the tops of the highest trees.

The northern lynx is found in great abundance in the country south-west of the Hudson's Bay settlements, but it is scarce to the north of Churchill river. Large packages of the skins of this species are exported by the Hudson's Bay company to Europe annually; in one year nine thousand were sent. The fur is highly esteemed by the dealers in peltry.

The northern lynx is fearful of man, offers very little resistance when attacked, and is easily killed by a smart blow over the back. This animal is

lations of the habits and appearance of animals frequently introduced into popular books; when given correctly or consistently with the true character of the animals, references to nature always impart pleasure, and add to the durability of the work they are intended to adorn.

* The description of the *Felis Rufa*, bay lynx, or wild cat, will be given in the appendix.

not often found to approach closely to the European settlements, but frequents the plains and woods where the animals on which it subsists are obtained in greatest abundance. The flesh of this lynx is considered good food by hunters, being fat, white, and flavoured like the hare, on which it principally feeds.

The northern lynx has a large body and strong legs, and measures about three feet from the tip of its nose to the end of its tail, which is about six or seven inches long, and black for half its length towards the extremity. The head is thick and round, and the ears sharp and tipped with a tuft of black hair. There are four or five small undulating bands on the cheeks, and the labial whiskers are white. The animal is about sixteen inches high.

The general colour of the northern lynx is deep reddish, marked on the flanks with small oblong spots of a reddish brown, with small round spots of the same colour on the limbs. The ears are black externally, but covered by an angular space of shining ash colour; the eyes are surrounded by a whitish circle to a black longitudinal mark above them, running from each side towards the front. The back is never marked by a black band along its middle.

In summer dress the pelage is short, the hair being brown at the base and of a bright red at the point. In winter the hairs are longer and all their points are whitish; the silky hairs, which are most numerous and long in winter, render the colour of the animal ash or whitish, which in summer gives place to the more decided red, marked with brown spots.*

* Temminck, Monog. de Mammal. livr. 4e. p. 111.

CHAPTER XVI.

Family IV.—Carnivora Amphibia; *Amphibious Flesh-Eaters.*

The peculiarities of conformation observable in these animals clearly demonstrate that they are destined to pass the greater part of their lives in the water. Their bodies are elongated, tapering from the anterior part of the chest to the posterior extremities, very flexible and powerfully muscular. The members are so modified as to be enclosed by the skin of the body, allowing only their flexible extremities to project; the hind legs presenting backwards, and placed in such a manner as to correspond to the tail of a fish, both in use and position. The heads of these animals are either entirely destitute of projecting ears, and have a small slit, which is closed by muscular action to prevent the entrance of water, or they have very small triangular ears, little more than perceptible. The nostrils are provided with a peculiar muscular apparatus, by which their orifices are perfectly closed at the will of the animal, effectually excluding water from the lungs during submersion. Their power of swimming is still further augmented by their coat of close smooth hair, which uniformly has the points presenting towards the posterior extremities. The feet are very imperfectly adapted for walking.

Genus XVII. Seal; *Phoca*, C.

Gr. Φωκη.
Ger Robbe; Seehund.
Fr. Veau Marin, Phoque.
Dutch, Rob; Zeehond.
Den. Sœlhund, Sœl.
Swed. Själ.
Ital. Foca.

GENERIC CHARACTERS.

The seals, like other mammiferous animals, are provided with four limbs, yet nothing but their extremities appear externally, being closely covered up by the integument of the trunk of the body, the fore limbs to the wrist, the hinder to the heel. The digits of the fore feet are successively shorter from the thumb, which is the longest. The posterior feet have the lateral digits either longer than the intermediate, or the whole nearly of an equal length. On the upper lip are strong erectile whiskers; the tongue is smooth and bifid at tip. The stomach is simple, the cœcum short, the digestive tube long and nearly equal in size. The nose is closed by the action of muscles at the extremity of the nostrils. The heart is formed in all respects analogous to terrestrial warm blooded animals, but their blood is very black and abundant. They have a large venous sinus in their liver, which (Cuvier thinks) may aid them in diving, by rendering respiration less necessary to the circulation of their blood.

Dental System.

We have seen, in describing the dental systems of insectivorous and carnivorous animals, what strong resemblance exists between the molars of the former

and the tuberculous molars of the latter, being alike in their forms and destinations, composed of the same tubercles, and arranged according to the same relations, but only a little more obtuse in the carnivorous than in the insectivorous animal, and in all better suited for crushing than cutting.

We shall now see in the seals of our first division all the molars assume the form of the regular false molars, varying in their degree of slenderness and trenchant character, with deeper or more numerous serrations on their edges, and having several roots; and in those of the second division, we shall find them take in thickening a more or less conical form, which seems so much the more to make the transition from these teeth to those of some cetaceous animals, as each of them appears to have but a single root.

These are the only two general forms under which we find the molars of seals; but the divisions they characterize, and which may be considered as sub-orders or families, are divided into several groups by other considerations, and among these by the incisive teeth, which differ in number in different species. In this respect the seals, having teeth with several roots, form three divisions: 1st, those having six superior and four inferior incisors, among which we find the common seal:—2nd, with four superior and four inferior, (as in the *P. Monachus*):—3d, having four superior and two inferior, (the only example of which is the *P. Mitrata.**)

---

* Sent from New York to Paris, and thus named by Mr. Milbert.

Seals having several Roots to their Teeth.

34 Teeth:
- 18 Upper
  - 6 Incisive
  - 2 Canine
  - 10 Molar.
- 16 Lower
  - 4 Incisive
  - 2 Canine
  - 10 Molar.

In the upper jaw the first incisor is rather smaller than the second, and that, half the size of the third; all are hooked, terminating in a point resembling canine teeth in form, especially the last one. The canine follows after a vacant space; it is strong, uniformly rounded, except on its inner surface, where there are slight longitudinal ribs, separated at the base and united at their points. The first molar, situated at the base of the canine, is one-half smaller than the others, rounded, terminated by a point, around which are placed some other very small points irregularly disposed. The four which follow and resemble each other have the forms of false molars, but their posterior cutting edge is separated by two grooves into two serrations, the first very deep and the second slighter. These grooves are not so distinctly marked upon the last of these teeth.

In the lower jaw the first incisor is much smaller than the second, and they both partake slightly of the canine form. The canines resemble those of the other jaw, as do the molars, except that there are one or two grooves, and by consequence one or two serrations on the anterior cutting edge of those in the lower jaw.

In their reciprocal position the incisors and canine teeth of both jaws have the same relations as in the carnivorous animals, and the molars also resemble, in this respect, the false molars of these quadrupeds. They are alternate, and do not pass each other so as to cut like scissor-blades, but the trenchant surfaces of the opposite teeth are applied immediately against each other, dividing the food by direct compression.

The common seal (*Phoca Vitulina*) furnished Mr. F. Cuvier with this type of dentition.

A comparatively short time has elapsed since the animals of this genus served as fruitful themes to declaiming theorists, and gave ample scope to their ingenuity in explaining the supposed relations existing between them and other parts of the animal kingdom. From the ponderous volumes of Aldrovandus and Gesner, down to the fascinating eloquence of the inaccurate Buffon, these beings have been considered as a sort of anomaly, bearing the same relation to fish as that in which the bat was supposed to stand to birds; they have been invested by ignorant observers with various imaginary attributes, which have been frequently perpetuated through the heedlessness and prejudices of the learned. Happily for us, the absurdities involving this part of our subject have gradually and finally disappeared before the increasing light of science, leaving no food for wondering credulity, but developing innumerable objects for enlightened admiration, in the study of the beauti-

ful modifications of structure by which the great Author of nature has enabled breathing and warm blooded quadrupeds to dwell in "the vasty deep" without in the slightest degree depriving them of the intelligence or other characteristics of their order.

The natural history of the seal has been known during a great lapse of time, and what is more singular, is as correctly given by Aristotle as by Buffon, with all his advantages. This difference may be readily accounted for by observing that Aristotle states the facts which he had ascertained, without endeavouring to suit them to any preconceived opinion. De Buffon, believing in the absurd notion that animals capable of living for a considerable time under water had an opening between the right and left auricles of the heart, insists upon the existence of such a communication in the seal, even in opposition to positive demonstration. The prejudicial influence of error, when favoured by great men, is very clearly seen in the instance of the French naturalist, for the mere expression of his opinion was sufficient to induce M. La Vernière, who had dissected a seal and disproved the existence of the opening in the heart, to discredit the testimony of his own senses,* a degree of complaisance which we may hope will meet with few imitators at the present day.

---

* Je ne sais si le changement d'habitudes que cet animal avoit contractées auroit pu former une membrane de cette structure; mais *il me suffit*, monsieur, *que vous en affirmiez la possibilité*, pour être de votre sentiment."—*Rep. de M. de la Vernière;* Buff. 34. p. 47.

Seals are found on the sea coasts throughout the world in various degrees of abundance, and some species are peculiar to certain latitudes. They are most numerous very far to the north, where they almost exclusively furnish the Eskimaux resident in those chill regions with food, clothing, and implements made from their bones, &c.

Seals are viviparous, bringing forth and suckling their young on land; they are polygamous and gregarious, living in large families together, and exhibiting curious traits of character which will be described when treating of the species. They swim with admirable facility, remain for a considerable time under water, and derive their food entirely from the sea. They are very fond of sunning themselves upon the sea-beach or on ice-banks, scrambling upon them by aid of their flippers or fore feet. On land their movements are awkward and heavy, but not so slow as we might suppose from their appearance: to this motion of the seal the term "walloping" has been aptly applied. They are vigilant, intelligent, and tenacious of life. It was from imperfectly made observations on these animals, that the ancient fictions of sea-nymphs, mermaids, sirens and tritons were founded.*

---

* We subjoin a translation of Aristotle's account of the seal, that the reader may judge of the accuracy of this very ancient and truly illustrious naturalist, who flourished upwards of three hundred years before the christian era. The parts of his statement which are incorrect or doubtful are italicised.

"The seal is an amphibious animal; it does not inhale

De Buffon proposed to divide this genus into two parts or subgenera, founded on a character which to him appeared very striking and natural, the absence or presence of external ears.* This division was subsequently adopted by PERON, who formed his subgenera *phoca* and *otaria* for the reception of the species thus distinguished. The same arrangement is followed by CUVIER and Mr. DESMAREST, but is rejected by Frederick Cuvier for the following reasons:—He thinks there is nothing sufficiently absolute in this character, and that the common seal, which is considered to belong to *phoca* and not to *otaria*,

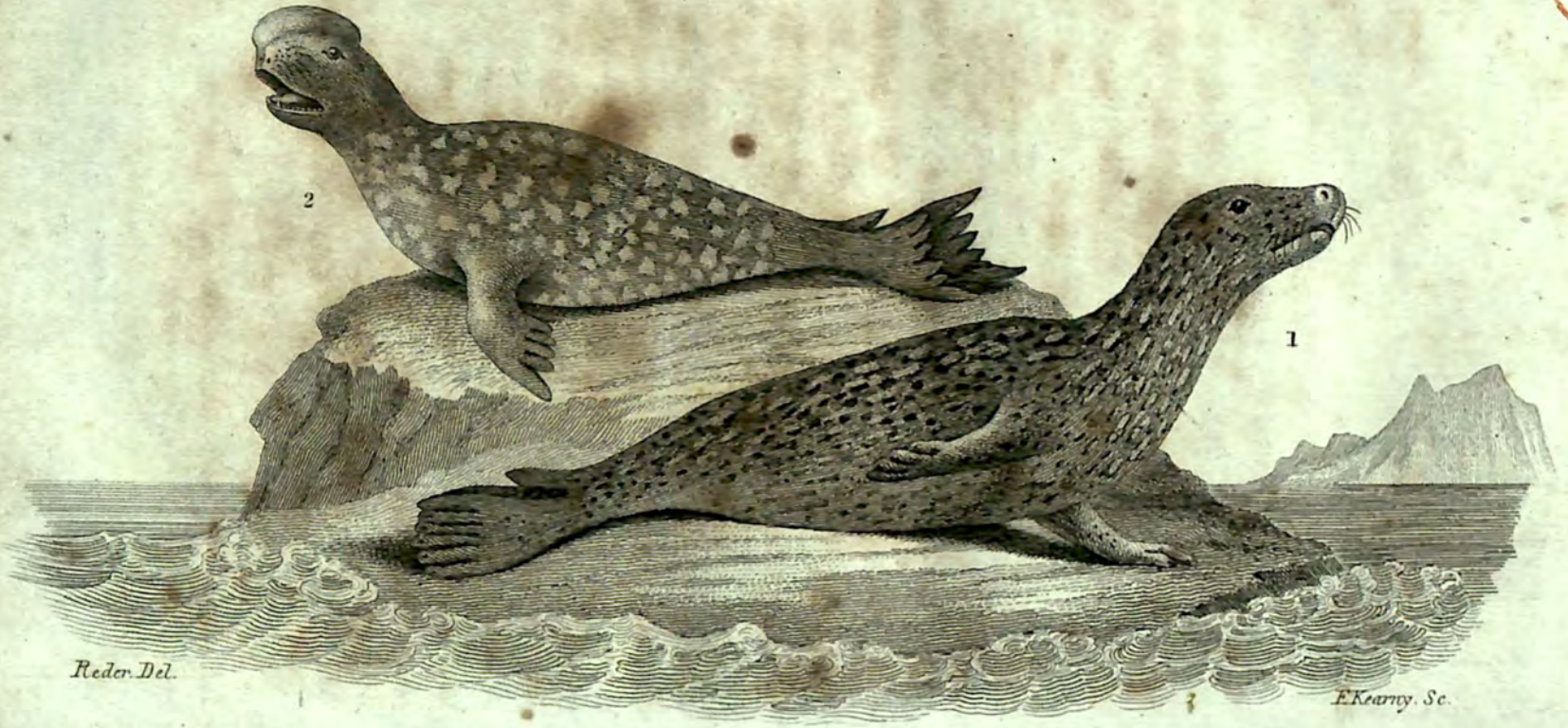
---

water, but on the contrary breathes the air; sleeps and brings forth its young on land as if it were a terrestrial animal, but couples on the margin of the sea. It passes the greater part of its life in the water, and there obtains its food; absolutely viviparous internally and externally, the female bringing forth living animals enveloped in a chorion; she has milk like a sheep. The young are one, two, or *at most three* in number. The teats are two in number, which the young suck like other quadrupeds. *The seal brings forth like the human race at all seasons of the year;* nevertheless most frequently in the season when the kids are dropped. When the young are about eleven days old the mother leads them several times a day to the sea, to accustom them gradually thereto; but as their feet are not yet able to sustain them, *they allow themselves to slide along without walking.* The seal can easily *draw up its body and double it on itself,** because it is fleshy, supple, and *the bones are cartilaginous.* Its great quantity of flesh renders it difficult to kill, if it be not struck on the side of the head.† Its voice resembles that of the bull.

* Buffon, par Sonnini, tom. 34e. p. 5.

* This is entirely true of the neck of the seal.

† "Αν μη τις παταξη παρα τον κροταφον." Κεφ. F.


2
1
Reder Del.
E.Kearny. Sc.

has nevertheless a perfectly formed though a very small external ear. According to his views, the character drawn from the incisor teeth, first employed by Mr. Blainville for the divisions of an inferior order, is preferable to that commonly adopted, after BUFFON and PERON.*

SPECIES I.—*The Common Seal.*

Phoca Vitulina; L.

Vitulus Oceani: ROND. 453.
Kassigiak: CRANTZ, Hist. of Greenland, i. 123.
Le Phoque Commun: BUFF. p. 34.

Our impressions relative to this animal will be very opposite, according as we see it for the first

---

* "Sans examiner la valeur physiologique de ce caractère, je ferai seulement remarquer qu'il n'a rien d'assez absolu, et que le phoque commun qui est considéré comme un phoque et non point comme un otarie, a une conque externe très petite il est vrai, mais très nettement formée. Quoiqu'il en soit cette division a généralement été suivie, et les derniers travaux des zoologistes la reproduisent. Le point de vue sous lequel j'envisage les phoques, ne me permet pas de m'y conformer; je crois même que les caractéres pris des incisives, et que M. Blainville a le premier employé pour les divisions d'un ordre inférieur, est préferable á celui qui est tiré de l'oreille, quoiqu'il ne produise point encore de reunions naturelles d'espéces comme nous aurons occasion de le faire remarquer. Ce sont donc les divisions formées par les dents que je suivrai dans les détails où je vais entrer." —*Des Dents Des Mammif.* p. 117.

time upon the land or in the water. Viewed while basking on shore, its peculiar form and seeming helplessness lead us to misjudge its strength and activity, while its motions are so clumsy and awkward that it excites a degree of compassion for its apparent deformity and imperfection. But, beheld in that fluid to which every peculiarity of its conformation is so admirably adapted, we relinquish all ideas of its imperfectness, with surprise that we could for a moment have indulged in them. Its countenance enlivened by large, dark, and lustrous eyes, which vigilantly regard surrounding objects, is remarkably expressive of intelligence. All its actions indicate the exertion of great strength, which is every moment displayed in movements of most graceful activity, whether while surmounting with head erect the foaming crests of the billow, and cleaving the waves with wonderful swiftness in chase of the finny tenants of the deep, wheeling in easy circles by gentle flexures of the body while sporting with its frolicsome companions, or diving profoundly to elude the pursuit of an eager enemy.

The common seal frequents the sea-coasts perhaps throughout the world, but is most numerous in high northern latitudes, and furnishes the inhabitants of those frigid regions with nearly all their necessaries and luxuries. In such situations, the Eskimaux are denied the opportunity of deriving their subsistence from animals which depend upon the vegetable kingdom for nutriment, but to compensate for this disadvantage, the seas which wash their ice-bound shores are thronged with seals and walruses, supplying to them the place of flocks and herds, without

requiring from those fed and clothed by them any provision for their maintenance.

This seal has a round head, which at the fore part bears considerable resemblance to that of an otter, though the whole aspect is not unlike that of some varieties of the dog, whence the name of sea-dog, sea-wolf, &c. has been applied to different species of seal. The extremity of the snout or muzzle is flat and broad; the posterior part of the head is very large and without bony projections; the upper lip is peculiar, moveable and extensible, garnished with long, unequally thick, strong whiskers, which are capable of being erected, or thrown forward by the action of a peculiar muscle. The seal has no external ear, but instead of it a very small tubercle on the anterior edge of the opening to the tympanum, which is placed considerably posterior to the orifice. Over the eyes, which are much nearer to the ears than the nose, there are seven or eight bristles similar to the whiskers, but smaller. The fore limbs are short, and the feet have five digits, joined together by a membrane, having thick, long, black nails projecting from their extremities: these nails are longer on the hind than they are on the fore feet.

The general colour of the seal is of a yellowish gray, varied or spotted with brown or blackish in different degrees, according to the age of the animal. On the head and back the colour is generally darkest, while on the flanks and belly it is pale. In advanced age the colour is generally whiter. The hair in this species differs remarkably from what we find in others, being close and not presenting entirely back-

ward. The hairs are individually stiff, harsh, flat and pointed, yet slender, dry and shining; they are blackish brown until near the point, and then yellowish gray.

From the organization of the common seal, as well as on account of the medium in which the greater part of its life is spent, we should not be induced to believe that any of its senses are remarkably acute. Its powers of vision appear to be considerable, though it sees much better in a moderate than in a strong light; its sense of smelling cannot be exercised to much advantage while the animal is under water, as at that time the nostrils are perfectly closed by muscular action. From the manner in which the whole external surface excepting the end of the nose is covered with hair, the sense of touch would appear to be slight, and the small size of the ears, as well as the manner in which they are generally immersed, lead to a belief that this sense also is not very acute.

Notwithstanding all these apparent defects, the seal is susceptible of a remarkable degree of education, learns to distinguish his feeder, to perform various actions when commanded, both in the water and on land, and acquires fondness enough for the society of domestic animals kept with him to attempt following them, in spite of his awkward and disadvantageous movements. The brain of the seal is very large, when compared with that of various other quadrupeds of less remarkable intelligence, and it is fair to infer that to this circumstance its intellectual superiority is attributable.

The manner in which the seal feeds is very interesting; when fish are thrown into a tub where several of these animals are kept together, they eagerly spring to a considerable distance in the air, raising half their bodies out of water and elongating their necks to the utmost. In most instances the fish is swallowed directly, without the slightest chewing, the swallowing being facilitated by the elevation of the head and straightening of the neck. If the fish be caught by the tail, it is immediately disabled by being crushed between the teeth, and is then turned head foremost and swallowed without chewing. When a fish too broad to be thus bolted is given, then the seal chews it, rather with a view of compressing it sufficiently to allow of its passage into the stomach than for the purpose of comminution. While engaged in feeding, the aspect of the seal is very different from what it is when the animal is quiescent. The upper lip is thickened and projected forwards, the bristles or whiskers fiercely erected, and the nostrils dilated and closed with force. They also feed while under water and swallow with as much ease as in the air, but in a different manner. Under water it opens the mouth but partially, and lowers the under jaw, while it separates the lips at the extremity, apparently drawing in the prey by suction. It is not yet ascertained in what manner the animal avoids the ingurgitation of water at the moment of thus swallowing.

In a state of captivity the seal expresses little or nothing of fearfulness, and does not avoid either man or animals, except when very closely approached. They are not inclined to bite or injure persons

examining them, so long as no attempt is made to touch them with the hand, or otherwise disturb them, but if thus annoyed they snap fiercely, and also strike with their flippers or fore feet. Their characteristic vigilance never appear to forsake them a moment. Three of these animals, two adults and one nearly full grown, were exhibited in this city last season, in a large box or tub containing water. Though they appeared to be very sleepy at times, and unwilling to be disturbed, yet every half minute the eyes were slowly opened, and it was almost impossible to succeed in touching them without their being first alarmed. These were caught in a bay on the coast of Massachusetts, by aid of a net; when first captured they fought desperately, and were with great difficulty secured. After being a few months in captivity they became quite harmless, and the younger one learned to perform several tricks, placing himself in different attitudes at the command of the keeper. They all died during the winter, in consequence of too much exposure to cold, in a small quantity of nearly fresh water, together with a suspension of all their natural habits. One of these animals occasionally made a noise resembling the loud snorting of a horse, and all of them were in the habit of drawing the head under water every few minutes, as if to moisten the eyes.

Frederick Cuvier has published, in his splendid work on mammiferous animals, some very interesting observations on two young seals kept in the menagerie at Paris, from which we shall here introduce a sketch. These individuals showed no fear in the presence of men or other animals, never at-

tempting to escape or withdraw themselves, unless to avoid being trodden on, and then merely removing to a short distance. One of them would occasionally threaten with its voice and strike with its paw, but would never bite unless extremely provoked. They were very voracious, yet showed no ill temper when their food was taken from them, and some young dogs, to which one of the seals was attached, would snatch the fish from his mouth just as he was about to swallow it, without the seal showing any sign of anger. When both the seals were suffered to eat together, they usually fought with their paws, and the strongest drove the other away.

One of these seals was at first very shy, and retreated when any one attempted to caress him, yet in a few days he became quite tame and confident of the kindness of those who approached him.—When shut up with two little dogs that used to mount upon his back and playfully bark and bite at him, he soon entered into the spirit of their actions, and took pleasure in their frolics, striking them gently with his paw rather to encourage than repress them. When the dogs ran off he would follow them, though the ground was covered with stones and mud. During cold weather he would lie in close company with the dogs for the sake of their mutual warmth. The other seal evinced a strong degree of attachment to the keeper, recognising him at a considerable distance, and using many expressive gestures and looks to solicit his attention and obtain food, the idea of which was no doubt associated with the presence of the keeper. These seals barked commonly in the

evening, or on a change of weather, though with a much feebler voice than that of the dog; their anger was exhibited by a kind of hissing noise.*

The common seal brings forth two young in autumn, and suckles them on shore until they are six or seven weeks old, when they are gradually accustomed by their parents to frequent the sea. At this period they are generally of a whitish or light fawn colour, covered with soft or woolly hair, and when in distress or hurt have a sort of whining voice. Seals are mostly associated in families consisting of a few males and a large number of females and young ones.† They are fond of landing on the sea-beach, ledges of rocks or ice-banks, for the purpose of basking in the sun, and in fine weather prefer being on the ice to remaining in the water;

---

* "A young seal, which was given by the master of a whaler to the officers of the Alexander, one of the ships on the former voyage, became so entirely domesticated and attached to the ship that it was frequently put into the sea and suffered to swim at perfect liberty, and when tired would return of itself to the boats and be taken in."—*Sabine*, p. 191.

† The principal part of the materials used in preparing the rest of our account of the seals and walrus is obtained from the valuable writings of CRANTZ, SCORESBY, PARRY and LYON. A very considerable number of other respectable authorities have been carefully examined, and their observations compared, with a view of correcting and enlarging the natural history of these useful and interesting animals. Much still remains to be desired to render this account complete; yet we may be allowed to hope that the reader will find a more ample collection of facts in the present instance than has yet been presented at any one view.

sometimes indeed they are very averse to take to the water when they have been out of it long enough to become perfectly dry.

When on their passage from one place to another they swim in very large flocks or shoals, and become visible to the mariner every few minutes, as they are obliged to come to the surface to breathe; this is generally done by the whole company nearly at the same time, when they spring up so as to raise their heads, necks, and even their whole bodies, out of the water. From the peculiar vivacity of their movements and general sportiveness of the company, such a shoal of these animals has obtained from the sailors the designation of a "seal's wedding."

The seal is peculiarly vigilant, and whenever a herd of them visit the shore some are always on the look out, and a seal when alone is observed very frequently to raise its head for the purpose of discovering the approach of enemies. Should they be on a large field of ice, they are always careful to secure a retreat by lying near the edge of it, or keeping a hole in the ice always open before them. The old ones are exceedingly vigilant and distrustful, the largest crowd of them immediately disperse at the approach of a boat, and few or none of them are taken, while the young ones, which are not so cautious, frequently fall victims to their inexperience by suffering the hunters to approach. The food of the common seal is fish, crabs and birds, which last it contrives to secure by rising under them and seizing their feet before they can be aware of its approach. Feeding on much the same food as some whales, the latter are not found where seals are very

numerous. In the spring of the year the seals are fattest, and yield several gallons of blubber, small ones affording four or five gallons of oil.

In the high northern latitudes, during the winter season, the common seal is found many miles from any open water, and makes a very circular hole through the ice, even when it is several feet in thickness, and there comes up to breathe. This opening is continually kept clear, and allows the entrance of the seal's body, the top being permitted partially to freeze over. These breathing places bear a considerable resemblance to mole-hills, and have a small crack through their upper part.

Since the whale fishery has in some degree declined in productiveness, seal hunting has risen in importance to Europeans and Americans, some ships being now sent almost expressly for the purpose of procuring the oil and skins of these animals, which are of extensive importance in commerce and manufactures. We shall make mention of the methods used by the *sealers* to take these creatures, before we refer to the implements and hunting of the Eskimaux, to whom the seal is more important than bread to other people, inasmuch as they depend on it almost for every thing.

Seals are sometimes enticed to the surface by music, or the whistling of an individual who is prepared to shoot them, and this proves that they can hear far better when under water than we might be inclined to believe from a mere glance at their external ears. When they hear this sound they come to the surface, elongate their necks to the utmost extent, and expose them fully to the aim of the hunter. They are

most effectually secured however by firing duck or other shot, which blinds them, so that they may be approached and despatched; when killed at once by a single bullet they most commonly sink. Another mode of killing the seal is to go to the caves on shore, into which herds of seals occasionally enter. When the sealers are properly placed they raise a simultaneous shout, at which the affrighted animals rush out in great confusion, and are despatched with wonderful quickness by a single blow on the nose, struck with a club. They are very tenacious of life when struck or wounded on any other part of the body.

The best situation for *sealing* in the Arctic Seas is stated by Scoresby to be in the vicinity of Jan Mayen's Island, and the best season the months of March and April. When the boats arrive at the ice, the sealers immediately attack the animals with clubs and stun them by a single blow over the nose, which mode enables one person to destroy a large number of seals; when they are seen on pieces of drift-ice they are hunted by means of boats, each boat pursuing a different herd; should the seals attempt to leave the ice before the arrival of the boat, the sealers shout as loudly as possible, and produce such amazement in the seals by this uproar as to delay their flight till the boat arrives and the work of destruction is begun. Where the seals are very numerous the sealers stop not to flay those they have killed, but set off to another ice-field to kill more, merely leaving one man behind to take off the skins and fat. When the condition of the ice forbids the use of boats, the hunter is obliged to pursue the seals over it, jumping from piece to piece,

until they succeed in taking one, which he then stops to flay and *flense*, or to remove the skin and fat. This sometimes is a horrible business, since many of the seals are merely stunned, and occasionally recover after they have been flayed and flensed. In this condition, too shockingly mangled for description, they have been seen to make battle and even to swim off.

The number of seals destroyed in a single season by the regular *sealers* may well excite surprise; one ship has been known to obtain a cargo of four or five thousand skins and upwards of a hundred tons of oil. Whale ships have accidentally fallen in with and secured two or three thousand of these animals during the month of April. The sealing business is, however, very hazardous when conducted on the borders of the Spitzbergen ice. Many ships with all their crews are lost by the sudden and tremendous storms occurring in those seas, where the dangers are vastly multiplied by the driving of immense bodies of ice. In one storm that occurred in the year 1774 no less than five seal ships were destroyed in a few hours, and six hundred valuable seamen perished.

Seal oil when properly prepared is pure and fine, and may be employed for all purposes to which whale oil is adapted. The skins of these animals are extensively consumed in various manufactures, especially in trunk making, saddlery, &c. The leather made from seal skin is perhaps the most pleasant material which can be worn in boots, on account of its lightness, softness and pliability, but it is too porous to be worn during the winter season, or in wet weather.

The Eskimaux hunt the seal in various modes, ac-

cording to circumstances. When the breathing place already described is discovered, the hunter raises near it a small wall about four feet high, of slabs of snow, to shelter himself from the wind, and sits under the lee of his snow shelter, having deposited his spear, lines and other implements upon several little forked sticks set up in the snow, in order to avoid making the slightest noise in moving them when wanted. The most curious precaution, taken with a similar intention, is that of tying his own knees together with a thong to prevent any rustling of his dress, which would alarm the seal. In this situation the Eskimaux will frequently sit for many hours, when the thermometer is below zero, attentively listening to ascertain whether the animal is working below.

When he thinks the hole is almost completed, he carefully raises his spear, to which the line is previously tied, and the moment the breathing of the seal is distinctly heard, the ice being then of course very thin, he strikes the spear into him with both hands, and cuts away the ice with his knife to repeat his blow. At other times, having enlarged the breathing place, he takes his position behind the shelter, and the animal, when he next comes to the hole, rises fearlessly out of the water, exposing his head and shoulders, and repeats this action with increased confidence. As he is not in haste to dive again, the hunter now starts up suddenly and drives his spear forcibly into him. Another method adopted consists in covering the breathing hole with light snow, and making an opening through the top of it with the spear handle about as large as the mouth of a bottle. The hunter then withdraws the spear

and takes his place behind his snow-screen, listening vigilantly until he hears the seal breathing beneath the snow, when he silently rises and plunges his weapon through the snow-covering into the body of the seal. The moment the seal is struck, the hunter endeavours to catch the line behind one leg to act as a strong check; and as an additional security, a hitch is taken round the ring finger, which is sometimes either dreadfully lacerated or entirely torn off by the violent struggles of a large seal. The animal is then stabbed until dead; the hole being enlarged, it is drawn out on the ice where it speedily freezes and is in condition to be drawn home.

When seals are seen on the edge of the ice next the open sea, the seal hunters dispose themselves in a single file, so as to conceal their number, and appear as few as possible when viewed from the point towards which they are moving. In this manner they creep cautiously towards the edge of the ice. When nearly close enough to throw the spear they all crouch low, and remain in this position for a quarter of an hour, during which time they get all their implements in in readiness for immediate service. Then when the seals are intercepted from view, they creep forward, gaining a few paces at a time, until they approach close enough to throw the spear, which is done suddenly and with full force. This mode of hunting the seal is occasionally attended by fatal consequences to the poor Eskimaux, especially if the ice be of recent formation, as large cakes are at times detached by the force of the tide, and swept out to sea without allowing the slightest opportunity for escape. When a seal is observed to come up through a hole

in the ice, a hunter sets off for the purpose of approaching it by stratagem. He crawls through the snow on his hands and knees, taking care to remain stationary whenever the seal raises his head, and advancing as soon as the animal allows it again to rest on the snow. When stationary as well as when moving forward, the hunter imitates the actions of a seal with singular fidelity, and improves every opportunity of approaching, until he comes near enough to strike his spear into the body of his victim and secure his prize.

The implements used by the Eskimaux in the vicinity of Winter Island in their seal hunting are principally the spear and the knife. The spear is called *ahliah* or *oonak*, has an ivory point, which is not fastened to the handle, but attached to it by a line, and when struck into the animal is immediately liberated from the handle, which is provided with a float or bladder. A few of the spears are made of a single narwal's horn of solid ivory, about four feet long, well rounded and polished. The bone of whale ribs is used for spear handles, or wood, when it can be procured, but the ivory of the sea-unicorn or narwal is more easily procured at Igloolik or Winter Island than either of these substances. When engaged in sealing on the ice the spear and knife are generally the only weapons used.

While hunting on the ice the Eskimaux use a long bone feeler, both for the purpose of sounding the cracks through which seals are thought to breathe, as well as for ascertaining the safety of the road. An instrument is occasionally used by them, when watching a breathing hole, serving the same purpose as

the float of a fishing line. This is an exceedingly delicate rod of ivory, about a foot long and as thick as a fine knitting needle, having a small knob at the lower end not larger than a pin's head, and a very fine piece of sinew to the upper extremity, by which it is loosely attached to the side of the hole. This small object is not observed by the seal on rising in the hole, and as he raises it with his nose, the watchful Eskimaux strikes the unsuspecting animal as he approaches the surface. Whenever the seal is secured, the orifices made by the spear and knife are carefully closed by small pins of bone or ivory, to prevent the loss of the blood, which is highly prized by the Eskimaux.

The seal is generally very fat, as his supply of food is abundant, and the amount of blood contained in his body is far greater than would be inferred from comparing him with other animals. The flesh is of a very dark red colour, and rather soft; that of the young animal is thought to be quite good by Europeans, but the Eskimaux are extremely fond of it at every age and under all circumstances.

The common seal or *Neitick* is the only seal the women are allowed to cut up among the Eskimaux residing near Winter Island. Before the knife is used on the animal they pour into its mouth a little water as it lies on its back, and with a little lampblack and oil taken from the under part of the lamp they touch each flipper and the middle of the belly. The object of this ceremony is unknown, but from the seriousness with which it is performed, seems to be one of high importance. The first operation in the division of the seal consists in cutting the animal into

two parts, laying open the cavity of the belly. The boys then come eagerly forward to have a small piece of membrane or bladder stuck upon their foreheads, of which they are very proud, as it is to make them expert seal hunters. The intestines are then removed; next the blood is carefully collected and put into the cooking pot over the fire. The head and flippers are then separated from the carcass and the ribs divided.

The loose scraps are then put into the pot for immediate use, except such as the *lady* butchers occasionally cram into their own mouths with great relish, or distribute to the bystanders, who are all eager to catch such precious favours. The little children, old enough to make their way between the legs of their friends, also present themselves to the attention of those who are engaged in this division of food, and are highly delighted when their efforts are rewarded by lumps of raw meat which are thrust into their mouths. The poor dogs seem to be the only visitants not allowed to participate at this preliminary banquet, as their attempts to subtract some small portion is always rewarded by heavy blows with the knife-handle. During the whole operation the surrounding friends are eagerly engaged in chewing portions of the raw intestines, which they sometimes allow to become frozen, and then snap off with the same kind of glee as is displayed by our youngsters in munching molasses-candy. One of the women from each of the different huts attends with her cooking pot to receive her portion of the flesh. When nothing is left but the blubber attached to the skin, it is removed,

and the two portions of the latter are rolled up and laid by with the store of flesh and blubber.

Then the feasting may be truly said to begin, and the voracious Eskimaux seem determined to indemnify themselves for all the privations to which they have ever been subjected. They gorge until they are absolutely stupified, and frequently are only saved from death by the occurrence of copious bleeding from the nose. One good trait, however, has been observed among them, and that is worthy of record; however hungry they may be, the children are supplied before any of the grown persons touch the food.

The descriptions given by various eye-witnesses of their filthy feasts, are such as almost to turn the stomach of a reader, though several of these accounts are given with great spirit and truth. We shall here introduce Capt. Lyon's picture of one of these entertainments in his own words, referring those who may wish to form a more extended acquaintance with the habits of the Eskimaux to his highly entertaining volume.

"On the 16th I was rejoiced to find the seal hunters had been successful; blood, blubber, entrails, skins and flesh, lying sociably intermixed in savoury heaps. Abundant smoking messes were in preparation, and even the dogs looked happy as they uninterruptedly licked the faces of the children, who were covered with blood and grease from the chin to the eyes. Universal merriment prevailed, and such men and children as could bear more food stood lounging round the women, who sat sucking their fingers and cooking as fast as possible. While the messes were preparing the children solaced themselves by eating

such parts of the raw uncleaned entrails as their young teeth could tear, and those morsels which proved too tough were delivered over to their mothers, who soon reduced them to a proper size and consistency for their tender offspring.

"At the distribution of the contents of one of the pots I was complimented with a fine piece of half stewed seal's flesh, from which the kind donor, a most unsavoury looking old lady, with the most obliging politeness, had first licked the gravy and dirt, and bitten it all round in order to ascertain the most tender part on which I should make the first attack. My refusal of this delicacy did not offend, and we had much laughing on the subject, particularly when the old woman, with well feigned disgust and many wry faces, contrived to finish it herself. In my rambles on this day of plenty I found, beyond a doubt, that the women do not eat with the men, but waiting till they are first satisfied, then enjoy a feast by themselves. In the meantime, however, the females who superintend the cooking have the privilege of licking the gravy from the lumps of meat as they are taken out, and before they are presented to their husbands. Both sexes eat in the same manner, although not in equal proportions, the females very seldom, and the men very frequently stuffing until they become quite stupified. A lump of meat being given to the nearest person, he first sucks it all round and then pushes as much as he can into his mouth, cutting it from the larger piece close to his lips, to the great danger of them and his nose. The meat then passes round until it is consumed, and the person before whom it stops is entitled to the

first bite of the next morsel. In this manner a meal continues a long time, as each eats or rather bolts several pounds, and the pots are in consequence frequently replenished. In the intermediate time the convives suck their fingers or indulge in a few lumps of delicate raw blubber. The swallows of the Eskimaux are of such a marvellous capacity that a piece of flesh of the size of an orange very rarely receives half a dozen bites before it is bolted, and that without any apparent exertion. The rich soup of the meat is handed round at the close of the repast, and each takes a sup in turn until it is finished, when the pot is passed to the good woman of the house, who licks it carefully clean and then prepares to make a mess for herself. On all occasions the children are stuffed almost to suffocation. The meals being finished, every one scrapes the grease, &c. from his face into his mouth, and the fingers are then cleaned by sucking."*

The food of the Eskimaux is cooked by the aid of a lamp which is supplied with seal oil, the wick being composed of moss. On this lamp are they also dependant for warmth in their huts, which are made of snow, as well as for their supply of water to drink, which, during a great part of the year, is only to be obtained by melting snow. A scarcity of seals, therefore, is accompanied by a series of ills, the hut is deprived of light and warmth, and the sufferings of famine are increased by the torment of thirst, against which they have no other resource under such circumstances except to eat the snow, which affords but

* Private Journal of Capt. G. F. Lyon, p. 141.

a partial relief. In judging of the filth and voracity of these poor creatures, we must ever bear in mind the circumstances which during so much of the time render water almost unattainable, except to quench their thirst, as well as the frequent and severe starvation to which they are subjected.

The Eskimaux apply the skins of seals to various purposes, amongst which the most important is the construction of their boats. The small boat to carry but one person is called *kayak*, and has been aptly compared in shape to a weaver's shuttle, having the head and stern equally sharp. There is an opening or hole in which the rower sits, having a rim or projection to which a part of the dress may be fastened in such a manner as entirely to exclude the water. The weight of the whole does not exceed fifty or sixty pounds, so that the boat may be readily carried by the owner on his head, and from the peculiar form of the rim without applying his hands.

The Eskimaux are very proud of their boats; they place a warm skin in the bottom to sit upon, and the position of the paddler is with the legs extended and the feet pointed forwards. Whenever any weight is to be raised, or the stowage of the boat to be changed, two kayaks lie together, and the paddles of each being laid across, a steady double boat is formed. When not paddling the occupant must preserve a very nice balance, and a tremulous motion is always to be observed in the boat. The Eskimaux in the vicinity of Winter Island have not the art of regaining the upright position when overturned by a dexterous use of the paddle. An inflated seal bladder is a constant appendage to the canoe equipage; the

weapons are kept in their places on the upper surface of the boats by small lines of whale-bone, tightly stretched across so as to receive the points or handles of the spears beneath them. The stem or stern of the boat is frequently stowed with flesh, birds or eggs; a seal, notwithstanding its roundness and liability to roll, is so carefully balanced on the boat as seldom to require being tied on. When going before the wind while a smart swell is running, the kayak requires the nicest management, as the slightest inattention would expose the broadside to the sea and be followed by immediate peril to this frail vessel. The extreme velocity with which the *kayak* is impelled, and the dexterity with which it is turned and guided, render it a very interesting object.*

The Eskimaux use another boat made of seal-skin,

---

* "A flat piece of wood runs along each side of the frame, and is in fact the only piece of any strength in the kayak. Its depth in the centre is four or five inches, and its thickness about three-fourths of an inch; it tapers to a point at the commencement of the stem and stern projections. Sixty-four ribs are fastened to the gunwale piece, and seven slight rods run the whole length of the bottom and outside the ribs. The bottom is rounded and has no keel: twenty-two little beams, or cross pieces (made of ground-willow or small whale-bones) keep the frame on a stretch above; and one strong button runs along the centre from stem to stern, being of course discontinued at the seat part.

"*Length.*—Body, 19 feet; stem projection, 3 feet 3 inches; stern projection, 2 feet 10 inches; total, 25 feet. Abaft the hole, 8 feet; before it, 9 feet 7 inches. *Height.*—Rim in front, 10 inches; behind, 11 inches; breadth at centre, 1 foot 9 inches; depth at the same place, 10 inches. Circumference of the rim, 5 feet 1 inch."—*Lyon's Private Journal, p.* 321.

which is larger and destined to carry luggage, or to transport their families. This is called *umiak* or *oomiak*, and is made nearly square at the head and stern. Its frame is made of whale-bone or wood, and the bottom is flat. The seal skins with which the frame is covered are deprived of the hair, and are at all times transparent, but especially so when wet. Each of these boats has five or six seats or thwarts, placed as in ours, and is moved by two very clumsy oars with flat blades, which are used by the women, and steered with a similar oar by another. They vary much in size, having the sides very flat and about three feet high. Sometimes they are as large as twenty-five feet in length by eight in breadth, and are capable of containing women, boys and small children, to the number of twenty-one persons.

To those who wish to become well acquainted with the details of Eskimaux manners and ingenuity, the works of Crantz, Ross, Parry and Lyon, will afford a fund of the most satisfactory information, more especially as in these works will be continually experienced the force of that charm which always accompanies statements made by zealous and well qualified observers.*

---

* An interesting paper, by the celebrated Otho Fabricius, published in the fifth volume of the Royal Danish Society's Transactions, gives a complete account and representation of the weapons and implements used by the Greenland Eskimaux in seal hunting. These implements are very similar to those used by the American Eskimaux, and what is more interesting, are called by the same names

When Lewis and Clark wintered on the Columbia river they found the seals very abundant on the coast, and believed that several species frequented the shores which they had no opportunity of examining. The common seal was observed in the river as far up as the great falls.*

Species II.—*The Hooded Seal.*

Phoca Cristata; L.

Phoca Leonina: Fabricius, Faun. Græn. •
Klap-Mysen: Egede, Greenl. p. 84. (Eng. trans.)
Neitersoak; Klapmütz: Crantz, Greenl.
Hooded Seal: Penn. Syn. No. 268, p. 342.
Phoca Cristata: De Kay, Ann. of the Lyceum of N. Y. vol. i. p. 94.

The hooded seal is most commonly found on the shores of Greenland, of Davis's Strait, and occasionally of Newfoundland. Recently an individual of this species has been captured in a small creek emptying into Long Island Sound, at East Chester, about fourteen miles from the city of New York.

The species is very obviously distinguished by the singular appendage it has on the head, formed by an extension of the skin of the front, which com-

---

by both people. This identity of language we have heretofore referred to as being of the highest importance in aiding us to form an opinion as to the original peopling of this continent.

*Lewis and Clark, vol. ii. p. 172.

municates with the nostrils, and can be inflated or elevated and depressed at the pleasure of the animal. The size of this hood, which extends from the end of the snout to five inches behind the eyes, is twelve inches, and its height nine. Through the anterior part of this hood the nostrils open, each two inches in diameter, and when the hood is undistended the cartilaginous partition of the nose may be felt from the outside, rising about six inches at its greatest elevation.

Internally the hood is strongly muscular, with numerous muscular fibres surrounding the orifices of the nostrils, and most probably corresponding to the sphincters which close the nostrils of other seals to prevent the entrance of water. Externally it is covered with short, bright brown hairs, and is slightly sprinkled transversely in many places.—Where the skin of the hood joins the common integuments of the head a few strong hairs are found, which are considered to resemble those which in other animals of this genus pertain to the eye. Over the sides of this appendage, as well as the cheek, we find twenty-five or thirty strong bristly whiskers arranged in rows and converging forwards. These are black and small in the upper rows; whitish, flattened and very stout in the lower, being about five inches long, all directed downwards, and when minutely examined appear to have a series of short alternate bevels on each edge, but no spiral turns.

Such is the curious structure with which the head of this seal is provided, and the question immediately occurs, what can be the use of so peculiar a

contrivance? To this question no satisfactory answer has yet been given, nor have we any thing better than conjecture to offer. As it projects over the eyes at the inner angle when depressed, the opinion was long since advanced, that the hood was intended to protect those delicate organs from the sand and other substances thrown into the air by the violent storms common on the shores frequented by the animal. But none of the other seals residing under circumstances of similar exposure, have any such protection, and their eyes are equally liable to injury from the same causes. The fishermen consider it a reservoir for air, to be used while the seal is under water. Dr. De Kay thinks that its great bulk when distended would prevent the animal from descending into or moving with facility beneath the water. If we compare the extent of this appendage when distended with the bulk and weight of the animal, which is estimated at about five or six hundred pounds, this objection does not appear to us sufficient to invalidate the probability of the last mentioned use of the hood. The opinion suggested by Dr. De Kay is, that the hood is subsidiary to the sense of smell, which he concludes to be peculiarly necessary to this animal, nature having left it unprovided with efficient weapons of offence or defence. It would be a very easy matter to speculate upon this subject, and remark that the use last suggested for the hood is by no means incompatible with that generally attributed to it by the fishermen, and that the offensive and defensive weapons of this seal are as efficient as those possessed by most other species which have no such subsidiary

appendage to the nose. To this might be added the probable correctness of what has been often stated, that this hood is a merely sexual distinction, &c. but we believe that all speculation not based on an actual and frequently repeated examination of the animal in its living state, and in its proper haunts, can lead to nothing better than multiplication of words. When the individual described by Dr. De Kay was attacked, he inflated the hood and uttered a bellowing noise, until killed by repeated discharges of a musket.

The hooded seal is seven feet long from the centre of the chin, or symphysis of the lower jaw, to the root of the tail, which is six inches and a-half long, and three broad at its base. The body is cylindrical, gradually decreasing to the tail, which is flat and tapering to a point, the whole skin being covered with flat hairs about an inch in length. The general colour is gray and dark brown, distributed in irregular patches, the grayish appearance arising from very short hairs beneath the white. The head, when the hood is undistended, appears small compared with the body, and the eyes are large, of a dull greenish hue, and distant six inches and a-half from the extremity of the upper jaw. The orifices of the ears are distinct, situated about two inches and a-half behind the eyes, without any rudiment of external cartilage or concha.

The fore paws or *flippers* resemble those of the common seal, but appear small in proportion to the size of the animal, are of a uniform dark brown colour, except near the body, where they assume the common mottled appearance, and are twenty inches

distant from the end of the jaw; their length is fifteen inches. Each digit is furnished with a strong, compressed channeled claw, the exterior of which is largest; at the base these are dark coloured; their tips are light horn colour. The hind paws are of the same length as the flippers, and lunated at their extremities, which are fifteen inches broad when expanded. They have five depressed claws or horny laminæ, of which the external are largest, all placed at some distance within the webbed extremities.

To the above description, which is drawn up from that given in Dr. De Kay's excellent paper quoted at the head of this article, we shall subjoin at full length his remarks on the peculiar dentition of this animal.

"Teeth, thirty in number; above, four incisors, two canine and ten jaw teeth; below, two incisors, two canine and ten jaw teeth. The incisors above are cylindrical and approximated; the two inner are small; the exterior much larger, and nearly half the size of the neighbouring canine. The canine are considerably larger than those of the lower jaw, and more incurved. The incisors of the lower jaw are very small and cylindrical; the jaw teeth above and below are small, distant, and have each a cutting edge; on the posterior part of this edge a notch or transverse indentation is visible. The first is placed at some distance from the canine, and is much smaller than the others.

"In the foregoing description the remarkable peculiarities presented by the teeth cannot escape notice. The incisors resemble the canine so much in form that their actual position alone can serve to

point out their nature. Pennant, in the Arctic Zoology, describes four above and four below, being led into this error by confounding the laniary teeth with the incisors. The molares, or what may with more propriety be designated as jaw teeth, are very small in proportion to the size of the animal, hardly exceeding those of a child of five years old. The whole number of teeth in this tribe varies from thirty to thirty-six. It is a curious coincidence that the different species distinguished by a great development of the hood, or appendage to the head, are equally remarkable for the same number of teeth. Thus the *P. Leonina*, Gm. (*proboscidea*, Peron.) and the *P. Cristata*, Gm. have but two incisors below, indicating a natural division in this partially known family."*

We have mentioned (p. 307,) a seal sent to Paris by Mr. Milbert under the name of *Phoca Mitrata*, which corresponds, in relation to the teeth, very exactly with the above. On this Dr. De Kay remarks, "it is possible that this may have been brought here from the north by a whaling vessel; should this prove to be the case, I should incline to believe it absolutely identical with the *Phoca Cristata* described above."

---

* Dr. De Kay's paper in the annals of the Lyceum, is followed by a very interesting detail of the appearances observed on dissection of this seal by Drs. Ludlow and King, which may be referred to by the reader with much advantage.

Species III.—*The Great Seal.*

Phoca Barbata; Mull.

Urksuk utsuk: Crantz, Greenl. (Eng. trans.) i. 125.
Lakktak: Hist. Kamtschatka, 420.
Urskuk: Egede, Dict. Greenl. Hafn. 1750.
Ogiuke: Parry's Voyage; *Oghioo:* Lyon's Journal, 830.
Phoca Barbata: O. Fabricius, Faun. Grænl. p. 15.
Phoca Major: Parsons, Phil. Trans. 47. p. 121.
Grand Phoque: Buff. p. 34.
Great Seal: Penn. Arct. Zool. i. 185. Sp. 73.

This seal, which grows to the size of ten or twelve feet, is found in the Greenland seas, and on the northern extremities of this continent. It most commonly rests upon the floating ice, and when it comes up on the fixed ice it is through holes near the outer edge of the field.

Its skin is about half an inch in thickness and covered with black hair, which in summer is almost entirely shed, leaving the animal bare. The whiskers of the great seal are long, pellucid and white, having the points softer than the other part, and curled. The middle digits of the fore-feet are longer than the others, which in relative length are like the fingers of the human hand.

The great seal breeds in the month of March, having a single cub, usually upon the ice among the islands; it approaches the land more closely at that season than at any other.

The great seal resembles the common seal in habits as well as in general appearance, being distinguished from it readily by its great size and large beard-like whiskers. The adults of this species swim slowly; their peculiar timidity and watchfulness render it

difficult to approach them, so that very little has been observed relative to their peculiar habits.

At some seasons the great seal is found to be remarkably fat, and its flesh is said to be very similar to veal. The Greenland Eskimaux cut its skins into thongs, and twist them into ropes, to be used in their whaling, and for various other purposes.

Species IV.—*The Harp Seal.*

Phoca Grænlandica; Mull.

Phoca Grænlandica: O. Fab. Faun. Grænl. p. 11.
Svart-side: Egede, Nat. Hist. Greenl. pl. 3.
Attarsoak: Crantz, i. p. 124. (Eng. trans.)
Harp Seal: Penn. Arct. Zool. i. p. 190. Sp. 77.

The harp seal measures from six to nine feet in length from the tip of the nose to the end of the tail, which is from five to seven inches long. In circumference at the thickest part of the body it is from four to six feet. It has a round head and high forehead, with a short nose, large black eyes, and whiskers disposed in ten rows of hairs.

Crantz informs us that this seal when full grown is almost entirely of a white gray colour, having a black figure on its back like two half-moons, with their horns uniformly directed towards each other. No seal varies its colour so much as this, and the Greenland Eskimaux change its name with these variations of colour. The fœtus, which is white and woolly, they call *iblau;* in the first year it is cream coloured and the name is *atturak;* in the second year it is gray and then called *atteitsiak;* in

the third year *aglektok* or painted; in the fourth *milektok* or spotted; and in the fifth year, when it has attained its adult age and the half-moon mark, it is called *attarsoak*. At this period the Russians call them *krylatka* or winged, on account of the half-moon marks.

The harp seal is quite common in the Greenland seas, where it frequents the deep bays, migrates twice a year, going in the month of March and returning in May, and again in June to return in September. It is also found near the shores of Newfoundland. The breeding season begins in July, and the female has one cub near the end of March or the beginning of April, which she suckles on fragments of ice remote from land.

The harp seal is very incautious, and shows much of the frisky or frolicsome disposition of the common seal. It is occasionally seen swimming in various attitudes, and whirling about as if for sport. This species lives in great herds that swim apparently under direction of a leader, who watches over the safety of the whole. They do not frequent the field or fixed ice, but the *floes* or large drifting ice. They are said greatly to dread the Physeter Microps, which forces them to seek safety on shore. The Greenlanders also drive them on shore by surrounding and pursuing them with loud noises whenever they come to the surface to breathe.

The harp seal has a large quantity of blubber, which yields a greater proportion of pure oil than is obtained from any other seal. Its skin is used by the Eskimaux to cover their tents and boats. The skins of the young make excellent boot-leather.

Species V.—*The Fetid Seal.*

Phoca Fetida; Mull.

Neitsek: Crantz, Greenland, i. p. 124. (Eng. trans.)
Phoca Fetida: O. Fabr. Faun. Grænl. p. 13.
Phoca Hispida: Schreb. Saeugth. tab. 86.
Phoque Neitsoak: Buff. xxxiv.

The fetid seal when full grown is about four feet and a-half long, and its skin is covered with a brownish or dingy white hair, spotted above and whitish beneath, composed of stiff bristles intermixed with a softer material. The hair does not lie smooth, but is rough and similar to that of a pig. The old animals are remarkably fetid, and this nauseous odour taints their flesh and fat equally.

The head of the fetid seal is short and rounded, about a third of its length being formed by the snout. The whiskers are pale, pointed, and compressed, having all their border undulated; the smallest of them are black. The eyes are small, the iris brown. The feet, ears, tongue and tail are similar to those of the common seal. The heels of the hind feet are scarcely apparent on account of the fatness of the animal.* The colouring varies very much according to the age. When the skins are wrought into clothing by the Greenlanders, the rough side is generally turned inwards.

The fetid seal frequents the fixed ice near frozen lands, and never relinquishes its haunts when old. It

* Desmarest, Mammalogie, p. 246.

has holes in this ice for the purpose of fishing, and is solitary in its habits, pairs being rarely seen together. It is not a timid animal, and is occasionally preyed upon by the eagle, being taken while asleep upon the surface. The flesh is not esteemed as food even by the Eskimaux, though they employ the different parts of its body as they do those of other seals.

Species VI.—*The Ursine Seal.*

Phoca Ursina; L.*

Ursus Marinus: Steller, Nov. Com. Petropol. ii. 231.
L'ours Marin: Briss. Quad. 166; Schreb. Saeugth. 122.
Ours Marin: Buff. xxxiv. p. 94. (Ed. Sonnini.)
Chat Marin: Krascheninikow, Hist. du Kamtschatka.
Ursine Seal: Penn. Quad. ii. 281. No. 485.
Otaria Ursina: Desm. Mammal. 240, Sp. 381.

The ursine seal is a large animal, being when full grown eight feet in length by five in circumference,

---

* This species belongs to Peron's subgenus *otaria*, and to F. Cuvier's second division, or seals having *single roots to their teeth*. The dental formula is the following:

36 Teeth: 20 Upper { 6 Incisive, 2 Canine, 12 Molar. } 16 Lower { 4 Incisive, 2 Canine, 10 Molar. }

These teeth interlock when the mouth is closed, and in their form and arrangement differ very considerably from those of the other seals. Their roots are remarkable for having a narrowing immediately below the crown; they then swell out strongly, and are elongated so as to form a cone

and weighing about eight hundred pounds. The female is much smaller than the male, but otherwise they are very similar to each other in appearance. The anterior part of the body is very thick, the posterior slender and tapering to the tail. The head is rounded, rising suddenly from the nose, which projects like that of a pug-dog; the eyes are large and prominent, and the ears conical and pointed. The whiskers are very long and white, and the lips thick.

The ursine seal differs very materially from most other seals in having the anterior limbs entirely at liberty, or not enveloped by the integument of the body. But the wrist, bones of the palm and digits, are covered with a naked skin, which is smooth on the superior and wrinkled on the inferior surface. The thumb is the longest of the digits, which decrease successively to the external or little one. All of them have a small nail. The posterior extremities are about twenty-two inches in length, articulated like those of other seals, but they can on account of their length be used by the animal to scratch the head. They have five toes, the internal of which is as long as the three next it, and the last is smallest of all. Each toe is united to the others by a broad web, which gives a breadth of twelve inches to the hinder feet when spread out.

The general colour of the ursine seal is black,

---

twice as long as the crown of the tooth. The same dental formula is applicable to the *Phoca Jubata*. See Dents des Mammif. p. 22.

which in old individuals becomes of a dull gray. The hair is long and stiff, having a soft down of a bay colour intermixed. The colour of the females differs as much from that of the male as her size. Sometimes they are ash coloured, and sometimes of a reddish brown.

This species is principally found on the islands which lie between America and Kamtschatka, and like the sea otter are there only seen between the 50th and 60th degrees of latitude. Ursine seals have also been killed on the shores of New Zealand, Staten Land, New Georgia and the Falkland islands.

They arrive at the islands between America and Kamtschatka in the month of June, and remain until September. When they first arrive they are excessively fat and lazy, moving very seldom, and sometimes remaining for several days near one spot, without being at the trouble of seeking food.*

They lie upon the shores in vast herds, but are separated into distinct families, each male having a seraglio of from eight to thirty or more females, over which he watches with incessant jealousy. The family, with the young and half grown individuals, sometimes amount to a hundred or more.

---

* Tempus illis coeundi, ad solis occasum est; mas fœminaque ad horam ante, se mare immergunt, leniter natant, unaque littus petunt. Femina prius ascendit, se resupinat et mari amore flagranti cedit. Ille tam magno ardore, quam suo pondere, feminam in arena lutove præter caput et pedes sepelit: tunc temporis, sic ad voluptatem intentus et sui oblitus est, ut cuique illum accedere et impune tangere liceat.

The old seals which are deserted by the females live by themselves, and are very fierce, irascible and quarrelsome, every intruder upon their resting places is immediately attacked, and they will incur any danger rather than resign their accustomed seats. At the approach of a disturber of their own species they relinquish their indolence and attack him, and should the two in their struggles disturb another, this third mingles in the fray, and thus at times the war extends throughout the whole flock on shore.

The younger males are excessively provoked at any attempt made by their neighbours to entice away one of their wives, and furious contests are the result of such interference with their families. After the battle, however, the females go quietly over to the conqueror, and become a part of his establishment. They inflict very severe wounds upon each other during their combats, and when they cease to fight plunge into the sea, in order to wash off the blood with which they may be stained.

The males are quite fond of their offspring, but cruelly tyrannical to the females. When any one attempts to catch one of their cubs the male opposes the aggressor, while the female tries to secure the cub by carrying it off in her mouth. But should she unfortunately drop it, the male attacks her and beats her dreadfully against the stones. When she recovers she crawls towards his feet with signs of great submission. Should the young be carried off the male then appears to be much afflicted. The female has commonly but one cub, which she brings

forth in the month of January. The cubs are quite fierce, and bark and bite at the sailors passing them.*

The ursine seal is a very swift swimmer, moving at the rate of seven or eight miles an hour, and is able to remain under water a much longer time than the common seal. It is very tenacious of life, and survives dreadful wounds for a considerable time. The old ones have a very disagreeable odour, which taints their flesh and fat. The flesh of the female and young is pleasant to the taste and similar to that of a lamb.

---

* See Foster's Voyage, ii. 429, 514.

CHAPTER XVII.

Genus XVIII. Morse; *Trichecus;* L.

These animals resemble the seals in their elongated and conical bodies, and the construction of their anterior extremities. They have a round head, no external ears, and small eyes. The orifices of the nostrils are far distant from the upper lips. The posterior feet are horizontally placed, have five digits, of which the two external are the longest, all being provided with small incurvated nails and united by a membrane. The most striking peculiarity of the genus is the tusks or prolonged canine teeth, which descend from the superior maxillary bone and project far below the lower jaw, serving the animal as offensive weapons as well as instruments to aid in climbing on ice-banks, &c.

Dental System.

32 Teeth:

- 14 Upper
  - 4 Incisive
  - 2 Canine
  - 8 Molar.
- 8 Lower
  - 0 Incisive
  - 0 Canine
  - 8 Molar.

In the upper jaw the first incisor, (separated by a vacant space of some extent from its fellow in one species, and very close in another,) when it first emerges from the socket, is a very small, conical and

hooked tooth, and being rudimental is soon worn out and disappears. The second, which is much larger than the first, is cylindrical and obliquely cut from the outer to the inside of the jaw. The canine is a very large *tusk* which is directed downwards, being curved towards the body; it is rounded on its external face, marked by a longitudinal groove on its internal surface, and rises from the maxillary bone as high as the nostril. The first molar, separated by a vacant space from the second incisive, and much larger than that tooth, is, like it, cut obliquely, but the oblique surface is slightly hollowed. The second molar, twice as large as the preceding, is cut in the same direction, but has two depressions or hollows at this part, one anterior and the other posterior, separated by an obtuse prominence, and narrow at its summit; the third strongly resembles the second, and the fourth is merely a rudimental tooth which falls out by age. All these teeth have but one very strong conical root, and they are formed entirely of a very hard compact substance analogous to that of the tusks.

In the lower jaw it appears that in early life the first tooth falls out, for which reason we have not counted it among the others. The four molars appear to have the same form, and are more extended from before backwards than from right to left, and the surface of their crowns is slightly convex. The last is somewhat smaller than the others, which are of equal size. These teeth are of the same nature as those of the upper jaw.

In their reciprocal position the first molars are opposed crown to crown; the second are alternate. These teeth are described from several heads, which

appear to have belonged to two distinct species, judging from the proportion of some of their parts, and not merely by the extent of the tusks. The differences observed in the latter led SHAW to conclude that there are two species of walrus, which, however, has not yet been ascertained.*

---

* Introductory to this dental system F. CUVIER has the following remarks:—"We have seen that the seals are related by their dental systems on the one hand to the terrestrial carnivorous, and on the other to the cetaceous animals. The morse, whose organs of motion are very similar to those of the seal, is widely different from that animal in respect to the teeth. In this particular the present genus has a system altogether singular, as it is not better adapted for bruising vegetable than for cutting animal matter. We might say that the teeth of these amphibia are especially destined to crush hard materials, because by their structure and relation to each other they act like a pestle against a mortar. They form one of those insulated groups which break the necessarily continuous series of classifications, and may be connected almost indifferently, according to the point of view under which we consider them, with either of the branches of the general system we admit. We should have placed them next to the seals, which would leave a large void between them and the frugivorous marsupial animals, but induced by certain analogies, which have also some foundation, we are led to treat of them after the ruminant quadrupeds. Furthermore, we should remark, that in these animals we begin to see the number of teeth vary in the individuals, because those which are rudimental disappear according to the age of the animal We may say that these organs diminish in importance, and should be considered rather in relation to their number than to their form and structure."

Fully assenting to the general correctness of the views of this distinguished naturalist, we do not deem the analogy above stated of sufficient force to authorize us to swerve

Species I.—*The Walrus.*

Fricheus Rosmarus; L.

Auak: Crantz, i. 125. (Eng. transl.)
Waltross: Marten's Spitzbergen, 78.
Equus Marinus, &c.: Ray, Quad. 191.
Odobenus: Briss. Quad. 48.
Le Morse: Buff. xxxiv. p. 158, Sonn.
Aywek of the Eskimaux: Lyon's Journal, p. 329.

This large and unwieldy creature bears a stronger resemblance to the seal than to any other quadruped, but is strikingly distinguished by the proportions of its body and its elephant-like tusks. Vast herds of this species formerly frequented the shores of the islands scattered between America and Asia, the coasts of Davis's Straits and those of Hudson's Bay, in latitude 62°. They have been found as far south as the Magdalen Islands in the Gulf of St. Lawrence, between latitude 47° and 48°. At present they are not met with in very great numbers, except on the icy shores of Spitzbergen and the remotest northern borders of this continent.

The walrus attains the size of an ox, being when full grown from twelve to fifteen feet in length, and from eight to ten in circumference. The head is oval, short, small, and flat in front, having the eyes

---

from the arrangement of his brother, which places the morse next to the seal. The resemblance of form, structure, modes of life and action, existing between these animals, render it not only more useful but more natural, and therefore more correct to view them in succession, rather than to separate them to so great a distance as has been done in the "Dents Des Mammifères."

set in deep sockets so as to be moved forwards or retracted at pleasure. The flat portion of the face is set with very strong bristles, which are pellucid, a span long, as thick as a straw, and twisted like a three plied rope. The orifices of the ears are very small, placed far back on the head and destitute of external cartilages. The nostrils open on the upper part of the snout; through these the walrus is accustomed to blow the water in a manner similar to that of the whale. The fore feet are from two to two and a-half feet long, and when extended are fifteen or eighteen inches broad, the digits being connected by a membrane forming a sort of webbed hand. The palms of old individuals have the cuticle on them a-quarter of an inch in thickness, in consequence of the friction to which they are subject in clambering up the rocks, &c. The hind feet are from two to two and a-half feet in length, and their breadth when fully extended is from two and a-half to three feet. Each toe is terminated by a small nail.

The ivory tusks, or prolonged canine teeth measure from ten to twenty inches, exclusive of the portion which is imbedded in the jaw, of seven inches and upwards in length. Tusks of the walrus have been seen thirty-six inches long, and weighing from five to ten pounds. The circumference of one twenty-seven inches in length is about eight inches at base. The inside is more compact and of finer grain than the ivory of the elephant; in the centre the colour is somewhat brownish, but otherwise it is pure white, though speedily growing yellow from exposure to the air. They are slightly hollowed where they arise from the skull, are somewhat

notched, and not entirely round. At the base they are about three inches distant from each other, and at the point about nine inches.

The skin of the walrus is generally about an inch thick, but is thicker on the neck than any other part of the body. The hair is short and of a yellowish brown colour, and the whole surface of the skin is marked by numerous chaps and wrinkles.

This thick skin is used by the Eskimaux for various purposes, such as the fabrication of cordage and coverings for tents, &c. It is used by the whale-fishers instead of mats, for protecting the yards and rigging of ships from being injured by friction. By tanning it is converted into a thick porous or spongy leather, by no means so serviceable as the raw hide. Previous to the establishment of the whale-fishery near Spitzbergen the walrus was considered of some importance, and voyages were made expressly to obtain them, for the sake of their ivory and oil. Since the whaling business has become so successful the walrus is allowed to escape unmolested, except by the Eskimaux, who feed upon its flesh with an eagerness only second to that with which they devour the seal.

On land the walrus is a slow and clumsy animal, but in the water its motions are sufficiently quick and easy. The head of a young walrus without tusks, when observed from some distance above water, bears considerable resemblance to the human face, and has been occasionally mistaken by persons unaccustomed to their appearance for that of a man.

The walrus is a fearless, but when undisturbed an inoffensive animal; it is monogamous, and displays

1. Harp Seal.—2. Walrus.

great attachment to its mate and young. The season in which the sexes seek each other is about the month of June; the female brings forth her cub early in the spring. When attacked the walrus is both fierce and formidable, more especially if in company with its young. Under such circumstances they become very furious, attempting to destroy their enemies by rising and hooking their tusks over the sides of the boat, in order to sink it. Frequently the violence of their blows is sufficient to stave in the planks of small boats. In speaking of an instance in which an attack was made on a herd of walruses, Capt. Lyon remarks,—"Mr. Sherer described the fury of the wounded animals as being quite outrageous, but those which were unhurt quickly forsook their suffering companions. The beast which sank the boat struck his tusks repeatedly through her bottom, and she filled immediately. *Had she* been alone not a soul of her crew could have been saved, for there was no ice within three miles, and to swim would have been impossible in such cold water."

The same author gives in another place the following account of a battle with some of these animals:—"On some stream-ice near us were several herds of walruses basking in the sun. They allowed us even to land on the pieces of ice on which they lay, before they commenced their cumbrous retreat, facing us with open mouth. We killed one, but he sunk before we could get the boat to him, and wounded several others, when seeing the Fury's boat had been more successful, we went to assist in towing her. On our way we met a male and female, attended by their cub, and soon wounded the

two old ones. They fought us, however, with desperation, and would not retreat. The female on being killed was secured alongside, but the male, even when shot in three places, and having two lances sticking in him, attacked us furiously, although each time he approached he received a bayonet to the socket. Having at last driven him near to the Fury's boat, our joint efforts despatched him, after about ten minutes struggle. This brave animal had repeatedly attempted to hook his tusks over the gunwale of the boat, had stove her slightly in three places, and left eight deep marks on her bow. The cub, which was black and without tusks, continued by its parents during the whole combat, and frequently endeavoured to mount on the back of whichever first rose to the surface. To this may be attributed the more than usual fierceness of the old ones, whose fears for their offspring prevented their own escape. The female, on being hoisted in, was considered as rather small by those who were judges. On each side she had two teats almost concealed in the belly, but they could be pulled out to the size and length of those of a sow. The stomach contained only about three pounds of pebbles and a handful of sea-weed." It has been frequently stated that the food of the walrus is sea-grass, shell-fish, and not flesh.* Capt. Scoresby states that he has found, in addition to such substances, parts of young seals in the stomach of the walrus.

The flesh of the walrus is occasionally eaten by the

* "Fucis, corallinis, testaceis, non carne victitant." Lin. *Syst. Nat. p.* 59.

whale-fishers and other voyagers, but is not considered to be a very desirable food, as it is dark coloured and very coarse grained. To the crews of ships which have been long at sea and confined to salted provisions, the use of this flesh at times proves very acceptable and serviceable.

One of the Eskimaux modes of killing the walrus in summer is the following: Perceiving a large herd asleep on the floating ice, as is their custom, they paddle to some other piece near at hand which is small enough to be moved. On this they lift their canoes, and then bore holes, through which they fasten their lines. As soon as every thing is prepared they quietly paddle the cake of ice towards the herd, each hunter sitting by his own spear and line. When arrived at the place where the animals lie snoring, each man if so disposed strikes a different one, though two generally attack the same. The wounded and terrified walrus now tumbles into the water, but cannot escape from the ice to which the hunters have fastened their lines. As soon as his victim becomes tired, the hunter launches his canoe, and, lying at a safe distance, spears him to death.

We have given Capt. LYON'S picture of Eskimaux feasting and gluttony when speaking of the common seal; in this place we shall introduce another sketch from the same masterly hand, which is inimitable of its kind:—"We found, on the 3d, that the party which had been adrift had killed two large walruses, which they had carried home during the early part of the night. No one therefore came to the ships, all remaining in the huts to gormandize. We found

the men lying under their deer-skins, and clouds of steam rising from their naked bodies. From Kooilittuk I learnt a new Eskimaux luxury; he had eaten until he was drunk, and every moment fell asleep with a flushed and burning face and his mouth open. By his side sat Arnalooa, who was attending her cooking-pot, and at short intervals awakened her spouse, in order to cram as much as was possible of a large piece of half boiled flesh into his mouth with the assistance of her fore finger, and having filled it quite full, cut off the morsel close to his lips. This he slowly chewed, and as soon as a small vacancy became perceptible, this was filled by a lump of raw blubber. During this operation the happy man moved no part of him but his jaws, not even opening his eyes; but his extreme satisfaction was occasionally shown by a most expressive grunt whenever he enjoyed sufficient room for the passage of sound. The drippings of the savoury repast had so plentifully covered his face and neck, that I had no hesitation in determining that a man may look more like a beast by over-eating than by drinking to excess."*

The fifty-fifth volume of the Philosophical Transactions,† contains the following account of the walrus, given by Lord SHULDHAM:—"The walrus, or sea-cow as it is called by the Americans, is a native of the Magdalen Islands, St. John's and Anticosti in the Gulf of St. Lawrence. They resort very early in the spring to the former of these places,

* Private Journal, &c. p. 182.

† Cited in Pennant's Arctic Zoology, vol. i. 173.

which seems peculiarly adapted to the nature of the animals, abounding with clams (escallops) of a very large size, and the most convenient landing places, called *Echoueries*. Here they crawl up in great numbers, and remain sometimes for fourteen days together without food when the weather is fair, but on the first appearance of rain they retreat to the water with great precipitation. They are when out of the water very unwieldy, and move with great difficulty. They weigh from fifteen hundred to two thousand pounds, producing from one to two barrels of oil, which is boiled out of the fat lying between the skin and flesh. Immediately on their arrival the females calve, and engender in two months after, so that they carry their young about nine months. They never have more than two at a time, and seldom more than one.

"The landing places are formed principally by nature, being a gradual slope of soft rock, with which the Magdalen Islands abound, about eighty or a hundred yards wide at the water side, and spreading so as to contain near the summit a very large number of these animals. Here they are suffered to come on shore and amuse themselves for a considerable time till they acquire a degree of boldness, being at their first landing so exceedingly timid as to make it impossible for any person to approach them.

"In a few weeks they assemble in great multitudes; formerly, when undisturbed by the Americans, to the amount of seven or eight thousand. The form of the landing place not allowing them to remain contiguous to the water, the foremost are in-

sensibly pushed above the slope. When they are arrived at a convenient distance, the hunters, being provided with a spear, sharp on one side like a knife, with which they cut their throats, take advantage of a side-wind, or a breeze blowing obliquely upon the shore, to prevent the animals from smelling them, because they have that sense in great perfection. Having landed, the hunters, with the assistance of good dogs trained for that purpose, in the night-time endeavour to separate those which are most advanced from the others, driving them different ways. This they call *making a cut;* it is generally looked upon to be a most dangerous process, it being impossible to drive them in any particular direction, and difficult to avoid them; but as the walruses which have advanced above the slope of the landing are deprived by the darkness of the night from every direction to the water, they are left wandering about and killed at leisure, those that are nearest the shore being the first victims. In this manner have been killed fifteen or sixteen hundred at a *cut.*"

Balls discharged from a musket are by no means very efficient in killing the walrus, unless aimed with care at vital parts. By shooting them with duck or other small shot, so as to blind them, they may be readily killed with lances or axes. When the walrus makes an attack upon a boat, endeavouring to mount upon the gunwale, the most successful mode of repelling it is by throwing a handful of sand into its eyes, which causes the animal to retire for a time, affording an opportunity to escape, or to make better preparations for defence.

END OF VOLUME I.

00038895

Digitized with financial assistance from the
Government of Maharashtra
on 02 January, 2016